THE FIFTY-SIXTH YEAR.

Companion to the Almanac;

OR,

YEAR-BOOK

OF

GENERAL INFORMATION

FOR

1883.

PART I.

GENERAL INFORMATION ON SUBJECTS OF THE CALENDAR, ASTRONOMY, FISH CULTURE, THE OPIUM TRADE, ART EXHIBITIONS, SALES, SALT MANUFACTURE, ELECTRIC LIGHTING, THE BRITISH MUSEUM, THE ROYAL COLLEGE OF MUSIC, PROGRESS IN AUSTRALIA, &c.

PART II.

ARCHITECTURE AND PUBLIC WORKS, SCIENCE, MUSIC, PHILANTHROPY, LEGISLATION, STATISTICS, CHRONICLE AND NECROLOGY OF 1881-82.

LONDON:

PRINTED FOR

THE COMPANY OF STATIONERS,

AND SOLD BY J. GREENHILL, AT THEIR HALL, LUDGATE HILL.

PRICE TWO SHILLINGS AND SIXPENCE; OR, FOUR SHILLINGS BOUND WITH THE BRITISH ALMANAC.

HARRISON AND SONS,
PRINTERS IN ORDINARY TO HER MAJESTY,
ST. MARTIN'S LANE.

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HALLEY'S COMET.

(With an Addendum on Periodical Comets.)

Many comets have approached us within visible distance during the last few years, six having been observed in 1880, seven in 1881, and three* in 1882, up to the time of our writing, in September. Not all these sixteen have indeed been new discoveries, several having been returns of known periodical comets; and the greater part of them have been only within the view of astronomers, requiring a telescope even to see them. It is not our intention at present to enter into a detailed account of any of these, but to relate some circumstances connected with the successive returns of another comet which is historically by far the most interesting of all. It is now (in the autumn of 1882) just 200 years since that particular return occurred which acquired for it the name by which it is now universally known. For after the appearance in 1682 Halley (who in 1720 succeeded Flamsteed as Astronomer Royal at Greenwich), applying the principles laid down by Newton, and comparing the elements of the comet's orbit with those which had been determined for comets observed in 1531 and 1607, concluded that they were in

* Another was, indeed, just *seen* momentarily during the total eclipse of the sun on May 17th; but of course it was impossible to determine its orbit from that one observation.

fact the same body, and predicted that it would return again in 1758 or 1759. In more recent times other astronomers have shown the great probability (amounting in most of the cases practically to a certainty) that observations of this comet may be found recorded at many previous appearances. Our countryman Mr. Hind has taken a large share in these researches, and has concluded that the earliest of the appearances in question was in the year B.C. 12, when the Chinese annals inform us that a comet was observed on the 26th of August and followed for about two months. The only European record of it is in the history of Dion Cassius, who, immediately after relating the death of the great general, Agrippa, to whom Augustus Cæsar owed the victory at Actium and most of the other military successes of his reign (generally peaceful except in the early part of it), speaks of signs and portents that were seen,* one of which was that "a star called a comet, which had been suspended directly over the city for many days, was broken up into lamps." We must not make too much of the last clause, in which, as Pingré remarks, the author draws considerably upon his imagination; it probably refers to the appearance of the comet's tail after the perihelion passage, although it may also have some connection with a simultaneous display of meteors.

The next return of this comet would probably be in the year A.D. 66, and it is very likely that it may be referred to in the history of Josephus, where, relating various portents that, in his opinion, betokened calamities coming upon Jerusalem when that rebellion broke out against the Romans, under the procuratorship of Petronius, which ended in the destruction of the city by Titus (commanding on behalf of his father Vespasian), says: "Thus there was a star resembling a sword, which stood over the city, and a comet that continued a whole year." Whiston remarks, in a note to his translation of Josephus, that he cannot certainly determine whether the historian means that the star was the same as, or different from, the comet, but that the words most favour their being different bodies. We cannot but think otherwise from the Hebrew style of expression (so fond of repeating things in parallelisms), which would be natural to Josephus. The comet's continuing "a whole year" is a manifest exaggeration. The Chinese records relate that a comet was discovered on the 31st of January, and followed for a space of

* As Agrippa died in March that year, the comet could not have been considered a portent of his death, but connected with it in some other way.

seven weeks. Mr. Hind considers that the perihelion passage took place on the 14th of January.

As the Celestials were in the habit of punishing their astronomers somewhat severely when detected in want of diligence, it is perhaps not wonderful that the only accounts we have of what were in all probability several later appearances of Halley's comet are contained in their annals. One of these occurred A.D. 141, but in A.D. 218 we hear of it again as being seen also farther west. Dion Cassius speaks of a very terrible star which appeared shortly before the death of the Roman Emperor Opilius Macrinus, who was killed soon after his defeat on the 7th of June that year, at Irumæ, near Antioch, by Elagabalus (a name, or rather appellation, which has been incorrectly lengthened into the form Heliogabalus), claiming to be the real or adopted son of Caracalla. His description is remarkable, and almost suggests the idea that two comets were seen about the same time. "A comet-star," he says, "appeared, and another star resembling the top of a pair of bellows, extending during many nights from the west to the east, terribly troubled us." It is to be presumed that he is referring to the direction of the tail. The Chinese records describe the comet as intensely brilliant, and give its course in the heavens. Mr. Hind finds that by fixing the time of its perihelion passage on the 6th of April, every circumstance related of it can be faithfully represented.

For notices of appearances of comets which there can be little doubt were also successive apparitions of Halley's comet in the years 295 and 373, we are again exclusively indebted to the Chinese annalists; but in A.D. 451 we have accounts of a comet observed not only in China, but also in Europe. St. Isidore, of Seville, and others mention its appearance about the time of the great defeat of the Huns, under Attila (who is celebrated in the "Nibelungen Lied" as Etzel, but the correct form of whose name is probably Atalik), in the plains near Châlons-on-the-Marne, by the combined forces of the Roman General Aëtius and the Visigothic King Theodoric, son of the famous Alaric. The Chinese observed the comet from the 17th of May to the 13th of July, and it was in all probability another return of Halley's, passing its perihelion that year on the 3rd of July. The great battle at Châlons probably occurred about the end of June.

The next succeeding return of this interesting body would be due about A.D. 530; and in that or the following year a great comet was seen both in Europe and China, which Mr. Hind

thinks was also a return of the same body, passing its perihelion in the beginning of November, 530. It is described by the Byzantine writers as "a very large and fearful comet," which appeared in the fifth year of the reign of Justinian, celebrated for his own laws and for the victories of Belisarius. Newton and Halley, not being in possession of the Chinese observations, erroneously thought that it was a previous return of the splendid comet observed by themselves in 1680, with a period of about 575 years. It is most probable, however, that that comet's period amounted to several thousands of years, and that the one in question was indeed seen by Halley, but two years later, in 1682, since which his name has always been attached to it.

The appearances in A.D. 608 and 684, are, like some previously noticed, recorded only in the Chinese annals. But at the return in 760, not only is the comet stated to have been observed in China during a space of fifty days, commencing on May 16th, but Theophanes has a notice of a remarkable comet "of the shape of a beam," having been seen that year in Europe, in the twentieth year of the reign of Constantine Copronymus, which was in all probability the same body. Mr. Hind thinks that it is "little short of a certainty" that this was a return of Halley's comet, and that it passed its perihelion on the 11th of June. The same view had been equally strongly expressed by M. Laugier—"ainsi la comète de 760 n'est autre que la comète de Halley." (*Comptes Rendus* for 1846, July 27.)

Early in the year 837, a very fine comet was seen, both in Europe and China. An anonymous writer relates that its appearance alarmed the Emperor Louis le Débonnaire, thinking, like Calphurnia, that comets portended the death of great persons;* but that he reassured him by pointing out the words of Scripture, "Be not dismayed at the signs of heaven."† This comet is not believed to have been Halley's; but Boethius mentions a second less conspicuous comet appearing in the autumn of the same year, which was probably another return of the one now bearing the name of our distinguished countryman.

In 912 a comet was seen in China, in the month of May, in the constellation Leo, which was probably, likewise, a return of Halley's. The Byzantine historians also describe it as resembling

* "When beggars die, there are no comets seen,
The heavens themseves blaze forth the death of princes."
Shakespeare, *Julius Cæsar*, Act ii, sc. 2.

† "Thus saith the Lord, Learn not the way of the heathen, and be not dismayed at the signs of heaven; for the heathen are dismayed at them."—Jer. x, 2.

a sword, and appearing during the short reign of the Emperor Alexander of Constantinople (brother of Leo VI, the so-called philosopher) who governed little more than a year as colleague and guardian of his young nephew Constantine Porphyrogenitus. It is said to have been seen during a space of forty days.

At the time of the next return, in 989, a comet was discovered in China on the 28th of July, and followed for thirty days, which is very likely to have been Halley's, passing its perihelion that year on the 12th of September. It does not appear that there is any record of its having been seen on this occasion in Europe, as M. Pingré has shown that an alleged Saxon one by Father Gaubil really refers to the year 998, when another comet was also seen in China in the month of February.

We now come to a very important year in English history, 1066, and we may at once remark that from and including that year, the successive appearances of Halley's comet are all unmistakably recorded. The first date at which it is known to have been seen in 1066 was April 2nd, from the Chinese annals; this, according to Mr. Hind, would be the day after the perihelion passage. The comet was first noticed in England a few days after Easter (which occurred that year on the 16th of April) whilst the king was still keeping the festival at Westminster, where (as Mr. Freeman, the great historian of the Conquest, thinks) he received that challenge by the Duke of Normandy of the crown which had been placed, at the previous feast of the Epiphany, on the head of Harold, by Archbishop Ealdred, with the concurrence of the whole English nation.

The comet naturally attracted great attention, and the famous Bayeux tapestry has a representation of the people gazing at it. Many men's hearts failed them for fear, but none could say what the stranger portended, whilst some, we may hope, did not forget the words of Jeremiah. At any rate, the magnanimous Harold did all that man could do, and in all human probability would have repulsed his crafty rival, had not a traitorous brother combined with the Norwegian king to attack also the northern side of the island, whilst the Norman was watching his opportunity to land on the southern coast. But details of this kind are somewhat foreign to our present purpose. How long the comet was seen in Europe is doubtful; one account says thirty days, and as the Chinese followed it till the 8th of June, nine weeks after its first discovery by those diligent gazers, this may very well have been the case, although it was by far the most con-

spicuous during the two or three weeks following Easter, when the moon was first waning, and afterwards scarcely or not at all visible, and the comet's northern declination amounted to about 30°, so that it was visible for a considerable part of the night (not, we may remark, the whole of it, as one chronicler fancied).*

We pass on to the appearance of 1145. Two comets were observed that year in China, the first of which was probably Halley's, passing its perihelion on the 29th of April. It was seen in Europe on April 15th; in China on the 24th and observed until the following July. But it does not appear to have been particularly conspicuous that year; nor were there any special historical events with which its appearance was associated. England was desolated by the wars connected with the contest between Stephen and Matilda for the crown. Manuel, son of John the Handsome, was imitating his father's warlike prowess in defending, from its numerous enemies, what was left of the Roman Empire in the East, and making the vain endeavour to restore it to its former boundaries.

In 1223, however, Calphurnia's notion recovered a plausibility which indeed can seldom fail it whilst there is any considerable number of princes on the earth. Early in July a comet appeared which we need have little doubt was Halley's; and on the 14th of that month occurred the death of Philip Augustus, who had been enabled by the weakness of our John of Magna Charta memory to reunite Normandy to France, an advantage in reality to England as well. A Latin dynasty, represented by Robert of Courtenay, now reigned at Constantinople; but some fragments of the dismembered Eastern Empire were still ruled by Greek monarchs, one of whom, under the title of Emperor of Trebizond, governed that district on the south-eastern shore of the Black Sea, which is so familiar to every schoolboy who has read Xenophon's Anabasis.

The appearance of 1301, when the comet passed its perihelion towards the end of October, is recorded by both European and Chinese annalists. The tail was long and brilliant, and the comet, which was first seen about the middle of September, was observed as far north as Iceland. At this time Edward I was still carrying on the war in support of his claim to the supremacy over Scotland, whilst the Scots were maintaining that the claim was unjust, because they were descended from a daughter of

* Part of the tail, however, may have been for a few days always above the horizon.

Pharaoh who landed in Ireland, and had therefore nothing to do with Brute the Trojan or the Britons. In the east, the Greeks had recovered Constantinople forty years before under Michael Palæologus; and it was now ruled by Andronicus, in whose reign the Ottoman Turks first became formidable, though (as Gibbon remarks) the glory of Othman himself is chiefly founded on that of his descendants.

In 1378, the year after the accession of our Richard II, the comet was again observed both in Europe and China, but would seem to have been less conspicuous than at the preceding return. The perihelion passage took place early in November. The unworthy John Palæologus was now reigning at Constantinople over the small remnant of the Greek Empire, the final catastrophe being delayed by the conquests of the famous Timour (often called Tamerlane, *i.e.*, Timour the lame), who, after a long war, defeated and captured the Turkish Sultan Bajazet at the battle of Angora, in 1402.

But one of the most noteworthy returns of this interesting comet occurred in the year 1456, three years after the taking of Constantinople by the Turks, and just after the commencement of the calamitous wars of the Roses in England. The comet was first seen at the end of May, and the Chinese annalists describe it as having a round head like a bull's eye and a long tail resembling that of a peacock. It is well known what a sensation its appearance made in Europe, alarmed at the progress of the Turks, and how the Pope, Calixtus III, had a special suffrage inserted in the Litany, beseeching the Divine protection against the comet, which was linked with the Turk and the Spirit of Evil. The year was noted for the check sustained by the Sultan, Mahomet II, who was forced by the Hungarian General, Huniades, to raise the siege of Belgrade. The comet appears to have passed its perihelion on the 9th of June.

At the two succeeding returns, in 1531 and 1607 respectively, the comet was less conspicuous, and the accounts of its appearance are few in number. For the former of the two, our knowledge of its path is derived from the observations of Peter Apian or Apianus (the Latinized form of his real name, which was Bienewitz), who was Professor of Mathematics at Ingolstadt, in Bavaria, and a diligent astronomer. The comet was first seen on the 1st of August, had a tail 7° in length, and was in perihelion on the 25th of August, about nine months after the death of Cardinal Wolsey. In 1607, the comet was observed by the illus-

trious Kepler, whose discovery of the laws called by his name led the way for the foundation of the Newtonian theory of universal gravitation, which is now established on so impregnable a basis that its non-acceptance by anyone is a complete proof that that person has never intelligently studied it. On that occasion the comet was first seen on the 11th of September, and approached nearest the sun on the 27th of October.

But, from a scientific point of view, the most interesting return of this comet was that of 1682 (when it was first observed by Cassini on August 25th). For the *Principia* had now been published, and Newton had pointed out the probability that some comets, at least, might be moving round the sun in eccentric ellipses and would be seen again at successive returns to perihelion. Acting on this hint, Halley compared the elements of the orbit of this comet, which he had carefully computed, with those of others as deducible from the observations recorded of them, and was at once led to notice the great similarity between those of 1531, 1607, and 1682. Hence he concluded that all three were, in fact, the same body (nor did he fail to notice that that of 1456 was also very likely identical), and he called upon those who should be alive (he could not look forward to being so himself) in 1758 or 1759 to watch for it again, and to remember that an Englishman had predicted that it would then return.

And so it did, being first seen by Palizsch, a farmer, of Prohlis near Dresden, with a telescope of 8 feet focal length, on the evening of Christmas Day, 1758. But as every astronomical treatise of any size contains a full account of the later appearances, we need not enter into any detail of them here. In 1682, the perihelion passage occurred on September 20th; in 1759, on March 12th; and in 1835, on November 16th. In the last of these years the comet, which was the third comet of that year, was first seen on August 6th, and was visible for forty-one weeks, or until about the end of May, 1836. The venerable astronomer, Professor Rosenberger, of Halle, who so accurately calculated the circumstances of its motion a little before its appearance on that occasion, is, we are glad to believe, still living.

Its orbit is now so well known that (to use the language of Professor Newcomb), "the astronomer can follow it with the eye of science with almost as much certainty as if he had it in the field of view of his telescope." In the year 1873, it reached the farthest limit of its course, some distance beyond the orbit of Neptune, since which it has been pursuing, hitherto very slowly

but at a gradually accelerating rate, its return journey. According to the elaborate calculations of the late Comte de Pontécoulant, it will next arrive at perihelion on the 24th of May, 1910. May many of our readers live to see it!

Addendum on Periodical Comets.

As the return of another periodical comet is expected in the course of 1883 (possibly it may occur before the end of 1882), it may be well to add a few words on periodical comets generally, meaning those which have been observed at more than one return. The comet in question does not, however, come into this category at present, as it has hitherto only been seen in the year 1812, when it was discovered by Pons (the first discoverer of no less than twenty-eight comets), at Marseilles, on the 20th of July. It was observed until the 27th of the following September, and was visible for a few days about the middle of August, to the naked eye; the memorable burning of Moscow, which compelled Napoleon to retreat, broke out whilst this comet was passing its perihelion, on the 15th of September. Encke afterwards determined the period to be about 70½ years, which recent calculations have confirmed, so that a return will probably take place within a few months from this time.

When this comet was first observed, seventy years ago, Halley's comet (so fully treated of above) was the only one known to have actually been seen at more than one return. But there is now a considerable number of such comets, all of which, as will presently be shown, are of much shorter periods.

The most famous of all these is the comet known as Encke's, because its periodicity was discovered by that astronomer at the return to perihelion in 1819. It then appeared that its first discovery was made by Méchain in 1786, and that it had been independently discovered on two subsequent occasions, in 1795 and 1805 respectively, being each time supposed to be a new comet. Its period is only about 3⅓ years (the shortest of all), and the last return was about the end of 1881.

In many respects the next most remarkable of the periodical comets is, or rather was, that known as Biela's, the periodicity of which was discovered at its return in 1826, when it was first seen by Biela in Bohemia. But its first discovery was made by Montaigne, at Limoges in 1772, and it was afterwards independently discovered as a new comet by Pons in 1805. The

period was found to amount to about $6\frac{3}{4}$ years, and the comet was observed again in 1832, 1845–6, and 1852. About the end of 1845, it separated into two portions, which both returned (but at a somewhat greater distance from each other) in 1852. Since then it has not been seen at all, at any rate as a comet, but it is supposed that a shower of meteors seen about the end of November, when the earth passes through the comet's orbit, may form part of its dispersed material, as the connection between comets and meteoric streams is now well established.

Faye's comet was first discovered by him at Paris in 1843. Its period is about $7\frac{1}{2}$ years, and it has been observed at every subsequent return, the last time about the end of 1880.

The late Professor d'Arrest discovered a small comet at Leipzig, in 1851. It was found to move in an ellipse with a period of about $6\frac{1}{2}$ years, and was observed again (but only in the southern hemisphere) in the winter of 1857–8. In 1864 it was not visible, being unfavourably placed; but was observed in 1870 and 1877, and another appearance is expected in the autumn of 1883.

M. Coggia discovered a comet at Marseilles in November, 1873, which was proved by Professor E. Weiss to be identical with one discovered by Pons, so far back as February, 1818, and to be moving in an elliptic orbit with probable period of about $6\frac{1}{4}$ years. It was not, however, seen in 1880; another return will be due in the spring of 1886.

Professor Winnecke discovered a small comet at Bonn in 1858, which he showed to be moving in a short ellipse with period of about $5\frac{1}{2}$ years, and to be in all probability the same as one discovered by Pons in 1819. It was observed again in 1869 and 1875, but not in 1864 or 1880, when its position was very unfavourable for observation. Another return will be due in 1886.

Brorsen's comet was discovered by him at Kiel in 1846. Its period is also about $5\frac{1}{2}$ years; it was not seen in 1851 or 1863, but was observed in 1857, 1868, 1873 and 1879, so that another return will be looked for in the autumn of 1884.

No less than three comets of short period have been discovered by M. Tempel, formerly of Marseilles, now of Arcetri, Florence. The first was found by him in 1867; the period is a little over 6 years, and having been also observed in 1873 and 1879, another return will be expected in 1885. His second periodical comet was discovered in 1873; its period is about $5\frac{1}{4}$ years, and it was also observed in the autumn of 1878, so that a return will

be again due towards the end of 1883. The periodicity of the third was not recognized until after its rediscovery by Mr. Swift, at Rochester, N.Y., in 1880; but it was first discovered by Tempel in November, 1869. The period is about 5½ years, so that an unobserved return must have taken place in 1875. Owing to its unfavourable position at the next return, it is not likely that this comet will be seen again until 1891.

We have one more only to mention, which has a considerably longer period. It is commonly called Tuttle's, having been discovered by Mr. Tuttle, at Cambridge, Mass., U.S., in January, 1858, when its periodicity was determined. It was shown that it was in fact first discovered by Méchain at Paris in 1790, and that it was moving in an ellipse with a period of about 13½ years, so that it had returned four times since then without having been noticed. It was, however, observed again in the autumn of 1871, passing its perihelion at the end of November, and another return will be due in the summer of 1885.

W. T. Lynn, B.A., F.R.A.S.

MODERN FISH CULTURE.

The best example of a long-continued and successful experiment in fish culture which we can point to in this country, has been carried on in the salmon breeding ponds at Stormontfield, on the River Tay, near Perth, N.B. Previous to the construction of a salmon nursery at that place by the proprietors of the River Tay Salmon Fisheries, no long-continued efforts in the way of fish culture had been entered upon in this country, nothing, at any rate, deserving the name of a business exposition of the art had ever been attempted. One or two experiments in artificial spawning had taken place, with the view of determining some problems which had arisen in connection with the natural history of the salmon, and the fact that immediate success attended those trifling operations, no doubt led in time to the efforts which have proved so successful at Stormontfield, and which have at length led to the establishment of "pisciculture" as a business in several places in the United Kingdom, notably at Howietoun, near Stirling, where Sir James Gibson Maitland has established a "fishery" of considerable dimensions.

Of the history of pisciculture previous to the advent of the Stormontfield ponds, it may be sufficient to state here, that much of what was known or rumoured required to be taken on trust and with the proverbial allowance for exaggeration. Ignoring altogether the more ancient facts which have long been in circulation regarding the varied arts of "pisciculture"—which, it may once for all be explained, is the art of depriving living fish of their ova, and nursing that ova into life in some place where the eggs of the female, impregnated by the milt artificially taken from the male, can be nursed into life, with the certainty of being protected from all enemies, while the trickling waters are performing the act of incubation. That protection, if desired, may also be extended for a year to the young fish—so that when released from the nurseries they may be able to seek their own food and successfully fight their numerous foes. It is a remarkable fact, although it is one not generally known, that the greatest period of mortality experienced by our shoals of fish is when they are only a few weeks old, at which time countless thousands of them die of absolute starvation. The very young of all fish families can only in the first stages of their life venture into the most shallow water in order to be safe from their foes, and while compelled to remain in the side streams of a river, they frequently lack that sufficiency of food which would keep them in health, and ultimately give them strength to fight their battle of life. The Chinese, who have long enjoyed the reputation of being adepts in pisciculture, provide food for the helpless shoals by throwing into the water at the spawning season yolks of eggs, which the young fish devour with great relish, and which form a means of keeping up the stock of fish food throughout the Celestial Empire. The Chinese, it may be stated, practise a most ingenious, yet simple, mode of obtaining supplies of fish-eggs from rivers in which fish are plentiful, in order that they may be transferred to rivers, which, from over-fishing, have become more or less barren—they take spars of wood, and binding them round with grass or straw, float them against the stream of rivers in which fish are known to be abundant; by such means thousands of eggs are captured, and transferred, spars and all, to any water which it is desired to stock. That plan would not, however, be available for the capture of some kinds of eggs. The salmon, for instance (*Salmo salar*), ploughs up a nest in the gravel of the river in which it is spawning, in order that its eggs may be buried in a sort of

trench or furrow. In the open sea, however, the eggs of the cod-fish do not sink in the water, but float upon it, and were the plan tried of gathering the eggs of that useful food-fish after the Chinese manner, it would probably prove successful; but the fruitfulness of the codfish is so remarkable that it is almost impossible to conceive a time at which piscicultural processes of any kind would be necessary, although the waste of fish-life in the sea during all the stages of its growth is inconceivably great. Nature, however, has endowed the female codfish with a remarkable degree of fecundity, as she yields her eggs in literal millions, as do many other sea-fishes. The herring (*Clupea harengus*), for instance, which is by far our most abundant fish, is endowed with the power of multiplying its kind after the most liberal fashion; as many as thirty-five thousand eggs having been counted in a single female of that family.

As regards the most valuable individual fish of this country—the salmon, it has long been known, that an enormous percentage of its eggs are from various causes annually lost, chiefly, however, from the failure of impregnation. When it is stated that the salmon under natural conditions performs the greatest function of its life in rapidly running water, the difficulty of the eggs of the female fish being properly impregnated by the milt of the male, will be at once apparent. A twenty-five pound salmon will, as a rule, carry twenty thousand eggs, and it is not an exaggerated statement to say that not half, perhaps not a third, of that number will be touched with the magic sperm which is to them as the breath of life, and without which they have been voided in vain. Of those which we may presume to have been properly impregnated with the life-giving fluid, hundreds will never produce a fish, the place of their deposit may be destroyed by the ravening floods of winter, and the ova be washed away to places where they cannot come to maturity. With unerring instinct, too, there always awaits the spawning season a countless array of enemies who feast on the eggs, whether impregnated or not. The yellow trout derives a rich feast from the salmon ova, and some of our birds live for weeks on such food as they can pick off the salmon "redds," or on that which is floated away down the steam. No sooner do the smolts reach the salt water on their first visit to the sea than countless numbers of them fall a prey to a relentless army of enemies lying in wait for them. It is this fact, then, of the great loss of eggs and fish-life incidental to natural breeding that has given

occasion for the construction of a salmon nursery as an adjunct to Scotland's most productive salmon stream—the River Tay.

The experiments in salmon breeding, for so long a period carried on successfully at Stormontfield, were commenced in the year 1853. At that time, from various causes, the rental derived by the proprietors of the salmon fisheries of the Tay amounted only to a little over 9,000*l.*, but in some previous years it had been much higher than that sum. It may be stated before going further, that nearly the whole of the salmon fisheries in Scotland are private property, yielding in some instances a large amount of rent. The total sum derived from the Tay salmon fisheries is at the present time about 20,000*l.* per annum. When the establishment of the salmon nursery at Stormontfield was resolved upon the Tay proprietors, who bore the expense of the breeding-boxes and ponds, doubtless hoped to derive some advantage from the erection, but they have apparently ceased to influence in any way the salmon supply derived from that river, which, to speak the truth, has not been increasing of late; indeed, there are persons who refuse to give any credit to the Stormontfield concern in respect of its being a factor in the increased rental. Be that as it may, the salmon breeding establishment at Stormontfield has played an important part in the annals of modern pisciculture, and has been visited and examined by persons from all parts of the globe, and whether we look upon it as an adjunct of the naturalist, or as a means of adding to the value of the river, it is equally interesting.

The salmon nursery and living ponds for the young fish occupy in all less than an acre of ground, and are kept up at an expense of about 86*l.* a year, including interest on the capital sunk in their construction; and, as it is stated to be possible, by means of the boxes and ponds, to throw half-a-million of well grown young fish into the River Tay every year, the cost must be taken as being exceedingly moderate. The establishment is easily described: there is first of all a series of boxes filled with gravel, over which flows a perpetual stream of water, in which are annually placed the eggs as they are obtained and fecundated. The boxes, it has been estimated, are capable of containing half-a-million of ova, but it is open to question if that number of eggs has ever been obtained, or having been obtained, if half-a-million of young fish has been the result. The mode adopted of procuring the eggs is exceedingly simple. Those appointed

to manipulate the fish repair to a given place on the Tay, usually to the mouth of the Almond—a tributary stream, where by means of their nets they capture as many gravid salmon, males and females, as will yield the desired number of eggs. Several visits are necessary before the work can be properly completed. The fish taken are found, sometimes, not to be sufficiently forward in condition to admit of their being spawned, it being necessary to the success of the operation that the salmon of both sexes should be on the very eve of multiplying their kind. Then again there is, on some occasions, a difficulty in finding a sufficient number of female fish in order to obtain a plentiful supply of eggs, it being a fact of salmon river economy that the male salmon are greatly in excess of the female fish. There can be no doubt, we think, of this fact, because in the course of natural spawning on the *redds*, as many as three male salmon have been seen in attendance on one female. On some occasions of the annual spawning operations for behoof of the Stormontfield ponds, as many as three hundred and fifty fish have required to be captured before the egg-boxes could be filled; only some thirty or forty of the number being fit to be handled. The mode of exuding the eggs from the fish, if the ova be thoroughly ripe, is quite simple; the hand is gently passed along the abdomen of the animal when the eggs shell out from the vent, just like so many peas. The milt of the male fish is dealt with in the same manner, and if it be thoroughly ripe it will begin to flow on the slightest pressure being applied to the belly of the fish. When the process of artificial spawning is finished, the fish are at once restored to the water from whence they have been taken, and from their lively departure it can at once be seen that no harm has befallen them. The eggs are well mixed with the milt, and some persons then wash them in clean water, after which they are ready to be laid down on the artificial *redds*.

At Stormontfield the ova, after it has been obtained in the manner described, is at once deposited in the breeding-boxes, and left there to be nursed into life by the ever-flowing water. No protecting cover is thrown over the hatching-boxes, the eggs being left to bear the natural temperature of the seasons, and according as the winter is mild or severe will be the date of hatching. As a rule, the first fish will be seen in about 116 days from the time the eggs are laid down; in some seasons the eggs take well on for 132 days to produce their fish. Once begun, the hatching progresses with great rapidity, and in the course of

about sixteen days, perhaps, every egg will have produced its fish, only a trifling percentage of barren eggs being discoverable, because one of the chief advantages of artificial spawning lies in the fact of every egg being impregnated. The tiny fish live for three weeks or so on the food provided for them by nature, after which they require to be fed with boiled liver grated small, or some other substance. The young fry do not grow with much rapidity, after a period of four or five months has passed they will not be much, if at all, beyond an inch or so in length. After that period, however, they begin to expand rapidly, and at the end of a year one moiety of a hatching of salmon will have become smolts, and be eagerly seeking the road to the sea, whilst curiously enough, but the reason why we cannot tell, the other moiety will still be tiny *pars*, as they are called, and will not assume the scales of smolthood till a period of two years has elapsed from the time of their birth. We do not propose to deal at present with what has been called "the par question," about which during the last half century so much has been written and spoken; it forms a chapter in the natural history of the salmon which would require separate discussion. Nor shall we at present enter upon any speculations as to the salmon's rate of growth, our business being with pisciculture only.

The value of artificial spawning lies, as we have endeavoured to make plain, in the aid which can be given to nature in protecting the eggs and young fish from their numerous foes, so that the supplies of mature fish can be thereby augmented. As regards the practice of pisciculture in connection with our fresh-water fish, that is so far as artificial spawning and protected breeding can be brought to bear in their increase, it may be as well to state that except for sport, none of the fresh-water fishes are of any value, the salmon excepted, and in a sense the eel. Of the salmon, it may be admitted that every fish brought to maturity represents in value a sum of at least 1*l.* sterling; if, therefore, a thousand fish can be added to the stock of a river by the mode adopted at Stormontfield, it means for the proprietary increased receipts to the extent of 1,000*l.* sterling per annum. As has been stated, the salmon throughout Scotland is private property, so that the proprietors of the fisheries can agree amongst themselves to enter into plans of pisciculture for their own especial benefit. As regards the working of English or Irish rivers, which can be fished by means of a permissive licence, if a portion of the sums derived from the fees paid for the licences

were devoted to the establishment of a series of breeding-boxes and ponds, it would in the end prove remunerative by means of the large additional supplies of salmon which would be obtained by net and rod-fishers. For a sum of 1,000*l.* it might be possible to construct a suite of breeding-boxes and two ponds for the reception of the fish, the interest of that sum would be 50*l.* per annum at 5 per cent., and for an expenditure of another sum of a hundred pounds, a keeper of the ponds and a staff of persons to aid in the spawning of the fish might be procured, by the help of whom a million of young fish might annually be added to the stock of any of our salmon rivers. Some modern authorities on the subject of pisciculture do not think it necessary to keep the young salmon beyond the period when they shall have consumed the food provided by their umbilical sac—a supply which we presume would be exhausted in the course of two or three weeks. The same persons advocate that the hatching of the fish should take place under cover, where the water employed in the operation could be regulated as to its temperature, but in reference to that phase of the question, the writer would remark, that the closer we can imitate nature in all her works, the more enduring the success obtained is likely to prove. The reason of there being two salmon ponds at Stormontfield may perhaps have been inferred by our readers from the explanation given as to the growth of the fish—only half of a brood becoming smolts in any one year, the other half remaining as par. If tiny newly hatched salmon were therefore to be let in among the comparative giants, they would have a great chance of being devoured by them; at all events the small things would never be able to compete with the hungry yearlings of the pond for the daily allowance of food which is bestowed upon them by the keeper.

We have gone into these details at some length because the salmon is our most valuable fresh-water fish, a thirty-pound specimen of *Salmo salar* being of far more value than a corresponding quantity of butcher meat! Another reason for our noticing what has been done at Stormontfield in connection with the salmon supplies of the River Tay, is that the breeding-boxes and ponds of that establishment present us with a good idea of what has been called "Pisciculture." All the operations incidental to artificial spawning and nurture are embraced in what is annually accomplished at that place—they may have been improved upon, but what we have tried to describe must be accepted as the foundation of all that can be done.

In France the arts of fish culture have been recognized by the nation and been prosecuted at the expense of the State. As in Scotland, the art of hand spawning was re-discovered by Mr. Shaw, forester to his Grace the Duke of Buccleugh, at Drumlanrig, when he was conducting his experiments on the growth of the salmon, so in France in the rivers of the Vosges, Messrs. Gehin and Remy made a similar discovery which was at once turned to commercial uses and speedily culminated in the erection of the National Laboratory of Pisciculture at Huningue, near Basle on the Rhine. This establishment has been in operation for many years, and has proved exceedingly useful as a centre for the distribution of fish eggs to barren rivers throughout France. Eggs of various kinds of useful fish are collected in quantities from the Rhine and other streams, and after being brought on a certain length, are quickly despatched to persons who have applied for them. On receipt they are at once placed in the waters and in time are able to breed and multiply their kind. The "fishery" which has been established at Howietoun, in Scotland, follows in some degree the round of business which has been inaugurated at the laboratory of Huningue, but the Howietoun fishery is entirely a private speculation, and one that we are glad to hear is likely to prove a very great success. The ponds and hatching-houses have been designed with care, and according to a statement of the noble proprietor, he is able to manipulate in one season as many as twenty millions of fish-eggs, which he is prepared to supply to those desirous of stocking ponds, lakes, rivers or canals in all stages of progress from fecundated ova to eggs which have begun to show the eyes of the future fish. Sir James is also prepared to supply young fish in all stages of growth from fry of a few weeks old up to yearlings and still more advanced specimens: the arts of packing eggs and of forwarding young fish to great distances are now so well understood that either can be sent for hundreds of miles in great safety, so that persons in Devonshire or Cornwall desirous of procuring a stock of fine Scottish trout of the far-famed Lochleven breed, can obtain the same from Howietoun at moderate cost: the mortality incidental to the voyage will not be more probably than from two to four per cent. Sir James Gibson Maitland has already supplied from Howietoun quantities of fish to various of the larger Scottish lochs, while he has thrown into one of the tributaries of the River Forth as many as fifteen thousand well

developed young salmon. English visitors to Scotland should not fail to visit both Howietoun and Stormontfield, they are quite in the way of those seeking out the picturesque; Howietoun is within an hour's drive of Stirling, Stormontfield within an easy drive of Perth.

One of the most ancient seats of pisciculture is situated at Comacchio in Italy, and it is worthy of being mentioned in these pages as it is still in a flourishing condition. The great lagoons of Comacchio are devoted to the fattening of eels, which are sold over all the dominions of the Pope. The business carried on at this place is, we have read, exceedingly remunerative. The mode of procedure is simple: the eels ascend to the lagoons from the Adriatic Sea by the River Po, canals having been formed in connection with the Reno and Volano mouths of that sea. What is then done is to admit the myriads of young eels and detain and feed them till they are sufficiently large to be captured and cooked for consumption—a large number of the fish caught being roasted in the great kitchen of Comacchio before being sent to market! Other portions of the eels which are fattened in the watery chambers of the lagoons are sold *cured* by being pickled or salted, and on the whole there is throughout the Papal dominions a wonderful demand for the eels of Comacchio. The work of eel culture is carried on in the most systematic manner, various of the smaller sorts of fish being cultivated to afford food to the eels, which are keen and voracious feeders. The chief food of the eel is the *Aquadelle*, a small fish which appears to multiply with great rapidity, and which is devoured in enormous quantities by its formidable enemies. It is said that the eels of the lagoon which enter the water like so many hanks of thread (1,800 fish to the pound at the date of entry), will grow at the rate of one pound weight per annum so that the quantity indicated in the course of four or five years will have become at least worth 42*l.* 10*s.* Enormous profits might be derived from the growing of eels, and in France pisciculturists are alive to the fact, young eels can be purchased at the rate of about forty francs the thousand, and after being kept for a couple of years, become worth three times the sum—a fact which is worth knowing. Another branch of fish culture carried on at Comacchio is the fattening of mullets, which is accomplished on an immense scale. It has been found possible to note the progressive growth of these fish which are kept in ponds during the first year of their life; 6,000 of these mullets,

when first introduced to the pond, weigh a little over sixteen ounces; at the age of one year four of these fish will be found to weigh one pound, and, as the late M. Coste, the great piscicultural engineer of France remarked, "Agriculture produces no such enormous and inexpensive harvests; its products are obtained at great expense; those of pisiciculture, on the contrary, are developed without the necessity of having recourse to those costly methods which absorb the greater part of the revenue." The lagoon of Comacchio forms a series of extensive marshes divided by islands, it is about 140 miles in circumference, and from 3 to 6 feet deep. The town in which is situated the great kitchen contains a population of about 6,500 persons, five hundred of whom are directly engaged in the work of fish culture; these are housed in barracks, and are subjected to a disciplinary life; they dine and sup at common tables, a portion of their daily food being derived from the fish which they cultivate. The gates of the canals are opened on the 2nd February of each year, when the "seeding" of the water begins by the mounting from the sea of great columns of eels. By the end of April, the business of seeding is completed, the sluices are closed, and the fish are left to the guidance of nature, and those interested quietly wait till it is time to gather the harvest.

Those who desire to see fish culture conducted on a vast scale must cross the Atlantic Ocean, and visit the land where all things have been created on a gigantic scale. The salmon supply of the Columbia river is undoubtedly greater than the supply of all the rivers of Great Britain and Ireland added together, but as the fish are free to all who choose to dip their nets in the water, it is not at all surprising that the wondrously prolific yield of that mighty stream is giving way, that it is in fact being "overfished." No restrictive legislation, so far as we know, has been devised to protect the fish of the American seas or streams; all are allowed to fish as often as they please within certain limits, and all are allowed to take from the waters miraculous draughts if they can obtain them. The remedy is found in "pisciculture." Millions of impregnated salmon eggs are despatched in the season to all parts of the State where they are wanted, so that a constant supply of fish is thus kept up. Not only is it so with regard to salmon and other fresh-water fish, but the denizens of the greater deeps of the sea have also been compelled to yield their seed in tens of millions in order that the national commissariat may be provided with a supply of wholesome fish-food.

The facts and figures of fish culture in the United States would occupy too much space to be copied into this article, but we may state here as one item in the account that in a recent year as many as fifteen millions of young shad were distributed! Over four millions of California salmon hatched from eggs collected in 1878 were sent to various localities in order to the re-stocking of waters that had been over-fished. Two millions of these fish were placed in the McCloud and Little Sacramento rivers. One of the greatest triumphs of American pisciculture has been achieved in the protected hatching of codfish—it has been found possible by this means to increase the supplies of that member of the *Gadidæ* family very largely, and to establish cod fisheries in waters which have not hitherto been frequented by that most valuable food-fish.

It is gratifying to know that what has been achieved in the United States by means of pisciculture has been carried out on well devised plans, guided by the hands and brains of masters of the art. It will be well for us when we find our supplies of edible fishes "giving out," and year by year lessening in bulk, if we take a lesson from the book of American pisciculture. It is quite certain that the salmon stock of the United Kingdom might be largely increased by means of protected breeding, and although a given expanse of water will only serve for the breeding and feeding of a given number of fish, it is believed that none of our salmon rivers are at present overstocked, whilst more than two-thirds of them would easily contain two-thirds more fish than now find a home in them. Fish of the salmon kind are easily handled, they come into fresh water every season to spawn, and so are at the mercy of man—let their spawn be protected from enemies, so that each egg will come to life, and it is obvious that our fish wealth may be very largely increased. Let it be borne in mind that to grow a salmon means to gain a pound!

J. G. Bertram.

FISHERY EXHIBITIONS—THEIR SCOPE AND UTILITY.

The chief value of a well-arranged fishery exhibition undoubtedly lies in its suggestiveness. The fish of the sea, which, in a sense, are obtained for nothing by those who capture them, yield a most welcome contribution to the national commissariat. It is, perhaps, not an exaggeration to say that food of a wholesome

kind, to the value probably of twelve millions sterling per annum, is derived from our immediate seas; it has been calculated, indeed, that the herring fishery of Scotland alone is worth over two millions a year, which large sum of money is virtually given to the fisher people as a gift, for the pasture fields of the sea are as free to them as the air they breathe—they are charged no rent, they have no expensive manures to provide, no wages have to be paid for cultivation, the only expense which needs to be incurred is that for reaping the productive harvest of fish which has been provided for their benefit. It will be something gained if by means of an exposition of the machinery of fish capture and an exhibition of the products which are captured, something new can be devised to economise the labours of our fishermen, and lessen the dangers to which they are exposed. It is probable that when the apparatus of capture used in distant seas are compared with what are in use at home, some new and distinct departure in fishery economy of a valuable kind may be the result—something, in short, may be devised, "all of a sudden," if we may use such a homely phrase, as at once to revolutionise various branches of fishery economy. This is not such an impossible occurrence as many persons may think; the writer knew a shrewd North Sea fisherman who used to argue that before long fish might be taught to seek their captors instead of their captors seeking them! This idea probably originated from the fact of the speaker being familiar with the French mode of catching sardines, the waters being baited for these fish by the distribution of very large quantities of the roe of the cod family.

In this country we have been singularly slow, considering our well-developed interest in the harvest of the sea, to move in the matter of fishery exhibitions, foreign countries having taken a long lead of us in the way of showing the people how the fish stores of their commissariat are filled. Now, however, that we have entered on the task, it is just possible that we may outshine those who have taught us the way we should go. We have, it must be admitted, made a good beginning, first by the local exhibition held at Norwich, and, secondly, by the more general exposition at Edinburgh, which was throughout a pronounced success, and the experience which has been gained in the working of these exhibitions will be of great value if utilised in the organisation of the still more extensive exposition fixed to open in London in May next. We have been present at some half-

dozen of the foreign fishery exhibitions, some of which were of much value in the way of "teaching nations how to fish"; a brief recapitulation of the "points" of these shows may be of considerable interest in view of the preparations now in progress in connection with the exposition about to take place in the great Metropolis. As was to be expected, the fishery exhibitions held in Holland, one at the Hague, the other at Amsterdam —there may have been others, but these were visited by the writer—were of an eminently practical kind, the Dutch being a decidedly matter-of-fact people, and at one time the finest fishers in the world; in herring fishing, however, they have long been surpassed by their industrious pupils the Scotch. There is an old proverb which says that Amsterdam was founded on fish bones, and it is true in a sense that much of the wealth which one sees throughout Holland was derived from the enterprise of the people as fishers. At the present time the Dutch are important contributors to the great piscatorial Bourse at Billingsgate —their trawled fish, turbot and soles, coming to our great London wholesale fish market in large quantities. It has been said that a Dutch-built fishing-boat, English rigged and manned by Scottish sailors, is the perfection of a fishing craft, all of which was made apparent at the exhibitions referred to, which were replete with most sorts of Dutch fishing gear, the shows of netting in particular making quite a feature in the collections. Every show of the kind has usually been noted for some particular exhibit, and *the* feature of the exposition which took place at the Hague was a full stretch of herring nets which, as may be supposed, took up a large share of the whole space; fortunately, those who arranged that particular exhibit were able to carry the drift round the greater portion of a field which was close to the place of exhibition, so that the full extent of a suite of herring nets was shown with some degree of success. Apparatus of various kinds designed for the capture of eels formed also a feature of the Dutch fishery shows, whilst an exhibit of a real trawl net gave a vivid impression of the power of that murderous fishing engine. Of the fishery exhibition held at Arcachon in France, it may be said that it was "fanciful" compared to those given under the auspices of the Dutch—the one was as the poetry of fishing, whilst the others were as the prose. It was a happy thought to hold such an exhibition at Arcachon, which is a place of fishing industries of an almost unique kind; it is, for instance, the great centre of oyster culture in France, the Mecca, as we may say, of

oyster culturists who journey thither from all parts of the coast to get insight into the business. There are also to be found at Arcachon suites of *viviers*, or receptacles for sea-fish, devised by the fishermen as a mode of expediting business, fish by this means being always at hand ready to meet all demands. A feature of the fishery exhibition held at this place was an excellent aquarium, in which the smaller fishes of the sea and many of the crustacean delicacies of the table were exhibited. Specimens of soils suitable for mussel culture and oyster ground were also shown, likewise a great number of fanciful apparatus for the capturing of fish of different descriptions. A striking feature of the exposition was found in regard to oyster culture, the Kemmerer tile and various other modes of collecting spat were shown and attracted considerable attention. Fishery shows of a similar kind to that held at Arcachon also took place at Boulogne and Havre, both of which proved successful.

The best of the foreign fishery exhibitions was probably that which was held at Berlin in the year 1880. The speciality of that fine show was undoubtedly the "exhibit" contributed by the United States, which, being sent at the expense of the nation, was exhaustive and of great interest, and which it is gratifying to note will be shown in London in May next. It is remarkable that already there can be discerned a distinct falling off in some of the American salmon and sea fisheries consequent on "overfishing"; as stated in another place (*see* article on *Modern Fish Culture*), no restrictions are placed on the capture of sea-fish, and as the salmon is not a property fish as in Scotland, it is no one's business apparently to protect it, so far at any rate as to place any restrictions on the number which may be captured, and it has been found even in the great rivers and lakes of America, as in the smaller surfaces of water in our own country, that their breeding and feeding capacity has a limit. The apparatus of pisciculture therefore, devised by the Americans, which attracted so much attention at the Berlin Fishery Exposition, and which will, as already stated, doubtless be shown in London, can be studied with interest and profit by persons interested in fishery matters. The Norwich Fishery Exhibition proved quite successful in a pecuniary point of view, a surplus of nearly a thousand pounds being left after all the expenses of the exposition had been provided for. One of the features of the exhibition held at Norwich was the awarding of prizes for essays on various topics connected with the working of the fisheries, and the natural and

economic history of our British food fishes, and the laws which regulate their capture and sale; money for the payment of the prizes gained by the successful essayists was liberally subscribed by a variety of persons and by one or two public associations; but curiously enough none of the prize essays have been published, notwithstanding the fact that a handsome surplus accrued from the exhibition. Is not this a mistake? Of what use are such essays if the information they contain, or the suggestions of fishery reform which the writers have made, are not brought before the public, or at all events before those persons who are most interested in fishery economy?

The promoters of the exhibition held at Edinburgh are not committing a similar blunder; they are to print their essays, which is a wise resolve, and as the Committee have a surplus of over two thousand pounds they will doubtless publish a handsome memorial volume descriptive of the success of their very well-arranged fishery show. One of the most remarkable "exhibits" at Edinburgh was that of ten thousand infantile fish, brought all the way from St. Petersburg in a large glass bottle with a perforated stopper. Notwithstanding the great distance travelled by these fish, there were scarcely any deaths; they were the fry of the species *Coregonus Bæri*, and were shown in the Aquarium attached to the Exhibition, along with various other fishes of an interesting description. The Fishery Exposition held in the capital of Scotland was notable for the variety and extent of its "exhibits." Oyster culture and pisciculture generally were suggestively represented, whilst the pollution of rivers was dealt with practically—methods of purifying the water being shown. These, it is needless to say, attracted a considerable share of attention—river pollution in Scotland being what has been described as a burning question. Another of the chief attractions of the Edinburgh Exhibition was the magnificent Swedish collection, shown by Mr. Oscar Dickson, which of itself might have formed an attractive show; it was especially rich in its display of the stages of herring growth, the natural history of that valuable fish being illustrated from the ova onwards. Over five hundred distinct articles were shown by Mr. Dickson, and if this exhibit should reappear at London, it will excite the interest of all students of fishery economy. The collections of stuffed fish were numerous, and several exhibits of aquatic birds and their eggs attracted attention, whilst the models of salmon ladders and other fish passes were highly suggestive. Among the foreign

countries represented in the Edinburgh Exhibition were: Sweden and Norway, France, Germany, Denmark, Belgium, Austria, Russia, China, and the United States of America.

It is to be hoped that all the "features" we have alluded to as characteristics of preceding exhibitions will be embodied in the one now being organised for London. Judging from the descriptive prospectus which has been recently issued, nothing will be neglected that can add to its attractiveness. It is to be hoped, however, that it will prove something more than a mere show. All who are interested in the procuring of a cheap fish supply as a welcome aid to the national commissariat, look forward to such demonstrations for help in still further systematising the capture and sale of fish, and the prevention of waste of all kinds. Obviously those engaged in the practical work of the fisheries have yet much to learn: the waste of spawn is enormous in our sea fisheries, we have seen literal millions of cod-roe sold for manure or absolutely wasted, fishes of every description are taken at periods when they should be permitted to rest, for the purpose of multiplying and replenishing their kind. It would seem that at no other time of its life can the herring be captured, except when it is about to spawn, which is certainly a signal misfortune, because at such periods of their life they are most unfit for food, all their flesh-forming properties being required for the development of their milt and roe. More attention, too, should be bestowed upon the regulation of our fisheries; boats and fishermen ought to be licensed, a small fee from each person engaged in the fisheries would suffice to pay for a fishery police, and to provide for the insurance of boats and fishing gear. In view of the calamities which are incidental to the business, a scheme of insurance, both for men and boats, is much required. It is to be hoped that the Directors of this London Exhibition will widen the ground in the matter of essays. We want to know, for instance, what foundation there is for the fear often expressed, that our stocks of fish are diminishing; an essay, or more than one, on this branch of fishing economy would be interesting. Another subject for a good essay would be a money estimate, with reasons, of course, for the figures, of the yearly value of our fish supply and of the value of the breeding stock. These remarks are perhaps crude, but they are offered in a suggestive spirit, and what we would above all things else advocate is that the London Fishery Exhibition should be suggestive.

J. G. Bertram.

OPIUM.

Opium is the partially dried, or, as it is termed scientifically, inspissated juice, which is obtained by making a series of incisions in the fully developed, but still green, capsules of the poppy, known to botanists as *Papaver somniferum*. The incisions are made in different ways in different countries, and are generally six or eight in number, sometimes horizontal, sometimes vertical, and sometimes vertical with diagonal branches, the object in all cases being to employ the method which is considered most likely to completely exhaust the juice from the capsules.

The variety of poppy which is principally cultivated for the sake of its opium is that with white flowers (*var. album* or *officinale*), but the varieties with purple and with red flowers are also cultivated as opium producers in different countries.

The area over which opium might be successfully produced in the temperate and sub-tropical zones is a very wide one: it might even be produced in England, as anyone can convince himself by making in the evening a few incisions in a fully developed capsule of a garden poppy; the juice which at once exudes from the cuts resembles milk, both in colour and consistence, but if left till the following morning it assumes a blackish-brown colour, and hardens sufficiently to allow of its being collected by scraping from the capsules. But although opium of an exceedingly good quality has been produced in many parts of Europe, and notably in France, yet the poppy is only cultivated on a large scale in those countries where both land and labour are cheap. As an article of any commercial importance, opium is only produced in Asia Minor, Egypt, Persia, India, and China. The Asia Minor produce, under the name of Turkey or Smyrna opium, is largely exported to Europe, where it is almost exclusively used in medicine, the reason for generally preferring it for this purpose being that the proportion of morphia contained in Turkey opium is found to be more constant and uniform than that contained in the produce of other countries. A small quantity of Turkey opium is also sent to China, but that country, besides what it produces for its own consumption, derives its principal supplies from India and Persia.

Opium appears to have been known from very early times, and is mentioned by both Dioscorides and Pliny under the name

of ὀπὸς (juice), while Hippocrates and Diagoras also allude to the use of poppy juice. The Arabic name *afioon*, the Hindu *aphim*, and the Chinese *afooyung*, are all probably derived from the original Greek name ὀπιον, which is merely a diminutive of the above word ὀπὸς. The original habitat of the poppy is not known; it has been asserted by some that opium was originally introduced into China from Nipal, but in any case it is certain that both the poppy plant and the use of opium have been known for centuries in China. Dr. Balfour, in his Encyclopædia of India, says, indeed, that the poppy has been cultivated in China at least ever since the Mongol dynasty (A.D. 1250—1368).

Opium is not the only product of the poppy plant which is utilised. The very young plants obtained from the first thinnings are eaten in salads, the flower petals are dried and used for wrapping the opium balls in, the ripe dried seeds are used in confectionery and for the expression of an oil which is highly esteemed by artists and others, and the leaves when dried are termed technically *trash*, and are used for packing the opium balls in chests.

Medicinally, the poppy plant is of the highest value; the ripe dry seed capsules are largely used for fomentations and soothing applications, but as their efficacy depends entirely on the active narcotic principle which they contain, it is evident that for this purpose whole capsules, and not those which have been previously drained of their opium, must be employed. Opium is, indeed, in one form or another, more largely used in medicine than any other narcotic agent, being employed both externally and internally to allay pain and to procure sleep, as a sedative, as a diaphoretic, and as an antispasmodic; in cases of diarrhœa and cholera it is very frequently prescribed, but as in large doses it is a narcotic poison, it requires to be used with caution, and only when acting under medical advice. Among the most commonly known preparations of opium used in the British Pharmacopeia are the solid and the liquid extracts of opium, tincture of opium (commonly known as laudanum), tincture of camphor and opium (commonly known as paregoric elixir), besides various pills, powders, ointments, and liniments which contain certain proportions of the drug.

The details of the process of opium manufacture differ somewhat according to the country or district in which the poppies are grown, but the following is a brief outline of the process generally adopted in British India:—

So soon as the flower petals are matured, and can easily be removed without plucking, they are carefully collected by

encircling the flower stem with the thumb and forefinger, and drawing the hand gently upwards; the petals thus collected are dried under slight pressure over a slow fire in the form of circular cakes, known as flower leaves, which are stored for use in the manufacture of the opium balls. After removal of the flower petals, the seed capsules are allowed to fully develope and mature, and they are then lanced in the afternoon with a small iron instrument for the purpose of causing the exudation of the milk-white juice, which, by the following morning, has solidified and turned black. The thickened juice is then scraped from the capsules, collected in earthen or brass vessels, and set aside in a shady place until it has acquired the requisite consistency, when the cultivators hand it over to the Government officials in order that it may be tested for adulteration, weighed, and placed in store, and that they may be paid according to a recognised scale. The manufacture into cakes does not commence until the opium in store has reached a consistence of 70°—*i.e.*, when it contains 70 per cent. of pure opium and 30 per cent. of water; when this period arrives, each cake maker is supplied with the exact proportions of opium, opium paste, or "lewah," and flower leaves required for making a cake of standard size; he then, by the aid of hemispherical brass cups, moulds the opium and "lewah" supplied to him into a cake, afterwards coating it with flower leaves. He takes care to make all his cakes as nearly uniform in size as possible, perfectly spherical, and weighing when dried two seers (or a little more than four pounds) each. These cakes are stored in well ventilated racks, turned every few days in order that they may dry uniformly, and when dry they are packed forty in a chest, and at the proper time forwarded to Calcutta for sale.

The discussions which have recently taken place at public meetings and in the press must have informed all who were previously ignorant of the fact that the Indian Government derives a considerable revenue from opium, but it may be of interest to some to know in what manner this revenue is collected The East India Company assumed the monopoly of the opium trade in Bengal in 1773, and, at first, farmed out for an annual payment in advance the exclusive right of cultivating the poppy and collecting the opium. After a few years, however, they adopted the system of annually exposing the contract for the provision of opium to public competition, the price bid determining the rate per maund at which the contractor

was bound to deliver the opium to the person appointed to receive it for Government, while at the same time he was informed what quantity was required to be provided during the year for export to China. As it was found that under this system the contractor had it in his power to oppress the cultivators, regulations were shortly passed which defined the amount to be paid to the cultivators by the contractors, and deprived the latter of the power to compel anyone to cultivate the poppy against his will.

In 1799 the system of contracts was abolished, and since that time the opium has been purchased direct from the growers, and manufactured under the supervision of Government officials. The cultivation of the poppy is now restricted to two agencies—those of Behar and Benares, the latter including some territories situated in the North Western Provinces, and some in Oudh; and in these agencies the area allowed to be placed under cultivation, and the quantity of opium to be brought forward for sale, are fixed each year by the Opium Department. The price per seer of opium to be paid to cultivators is also fixed each year, and growers are prohibited from selling their opium to anyone but the Government officers. The crude opium purchased from the cultivators is manufactured under Government superintendence as soon after receipt as it has acquired the necessary consistence, and, as previously explained, the cakes are then stored and dried, after which those intended for export to China or elsewhere—termed provision opium—are packed in chests and forwarded to Calcutta for sale by auction once a month to the highest bidder. The price realised varies, of course, according to the amount brought forward for sale and the requirements of the market, but in 1880–81 the average price per chest was 136*l.* 4*s.* 8*d.* A certain quantity of opium is also manufactured yearly for consumption in India itself; this is termed "Abkari" or excise opium, and is issued for sale at prices which are fixed by Government authority in the different districts, but which are never so low as to tempt buyers to export excise opium to China in preference to the provision opium.

In addition to the opium manufactured in British India a considerable quantity is also made in several of the native States of Western and Central India, and this is generally known as Malwa opium. The Government of India has, of course, no power to place any restriction on the production of opium in these territories, but they have arranged with the Governments

of the several States that the opium is only to be brought into British territory by certain routes, chiefly *viâ* Bombay, and that before being so brought each chest should pay an import duty, and as Malwa opium cannot reach the coast without passing through British territory, this duty can be so regulated as to place the produce of the native States on an equal footing with that from Behar and Benares.

The opium revenue is thus seen to be made up from two sources, viz.:—1, the difference between the cost price and the price realised at the auction sales of British Indian opium; and, 2, the amount levied as import duty—technically termed "pass fees"—on the native States, or Malwa, opium.

The actual amount of the revenue must, naturally, vary according to the year's demand for opium; for the year 1879–80 59,100 chests of Bengal opium and 44,085 chests of Malwa opium were sold or passed for export, while 4,408 chests of Bengal, and 2,125 chests of Malwa were issued or passed for internal consumption. After deducting the charges for manufacture, administration, &c., the net opium revenue for that year was 8,923,159*l*. About five-sixths of the total quantity of opium exported from India goes to China, but India is by no means the only country which supplies the Chinese with the drug. About ten years ago the Persians began to discover that the opium trade is a profitable one, and that the climate and soil of many parts of their country, especially Yezd and Isphahan, were eminently suited to poppy culture. They therefore determined to try and enrich themselves by this means, and to such an extent did they push the cultivation that cereals and other produce could no longer be obtained in certain districts, and in 1871–72 a famine resulted. Since that time the Persians have been more careful; but, nevertheless, Mr. Walter Baring, Secretary of Legation at Teheran, states that the total exports of opium from all the Persian ports have almost steadily risen from 870 cases in 1871–72 to 7,700 cases in 1880–81. It is, however, reported that the 1882 crop of opium in Persia has almost entirely failed. The Persian opium is not so highly valued in China as the Indian, partly on account of the inferior system adopted for its preparation, and partly on account of its having been, during the earlier years of the trade, much adulterated; but it is cheaper, and is therefore largely bought by the poorer classes, and is also used for mixing with and thus cheapening the Indian drug. Turkey also supplies China with a small

amount of opium, but China herself is the most powerful competitor in the trade with whom India has to deal. Notwithstanding numerous edicts and laws nominally prohibiting the cultivation of the poppy, it is very largely grown, and on a constantly extending scale throughout many provinces of China—mainly those of Yunan, Szechuen, Shensi, and Kweichow. No reliable statistics regarding the actual quantity of opium produced in China can be obtained, but it is considered by competent authorities that the total quantity cannot fall short of, even if it does not exceed, the quantity imported from foreign countries. Whether the Chinese Government can be in earnest in professing to wish to prohibit opium culture may be judged from the fact that home-grown opium is taxed at a rate which is only about two-sevenths of the rate imposed on foreign opium, and that thus the produce of their own country is in reality protected, to a certain extent, against foreign competition; still, notwithstanding its comparative cheapness, the Chinese opium is not so much appreciated as that of Indian growth, and is used mainly by the poor, except in certain provinces at a distance from the treaty ports to which Indian opium does not penetrate. Thus the Western provinces of China use exclusively home-grown opium, and the Indian produce is there completely unknown.

In some parts of India the natives use opium either for smoking or for taking internally as a stimulant, either in the form of pills or in that of an emulsion known as "kussumbha"; in China it is used almost exclusively for smoking in the form of a preparation called "chandu," which is made by breaking the crude opium into small pieces, which are first dried over a fire and then boiled in water; if the opium is found to be much adulterated or mixed with sticks, leaves, &c., it is allowed to cool and then reboiled, after which it is strained, the mixture being of about the consistence of thick treacle. In the opium-houses each customer is supplied with a small bowl of "chandu," an opium-pipe, a lamp, and an iron wire with flattened end, which he dips into the bowl, and, by twisting it round, causes a small piece of "chandu" of the size of a pea to adhere; this he places on the bowl of his pipe, and ignites at his lamp, when it burns, or, in the hands of inexperienced smokers, blazes up, and while burning the smoke is inhaled and emitted through the nostrils. Each pipe-bowl only supplies one or two whiffs of smoke, and the smoker refills his pipe until he has had enough. It is usual for smokers to recline on a divan while enjoying their

pipes, and it has been stated by some that a recumbent position is necessitated by the overpowering nature of the narcotic. That this is not really the case has been proved by Surgeon-General Moore, who visited the different opium-houses frequented both by Chinese and by Indians in Bombay, and even personally tried "chandu" smoking. He states that it had no more effect on him either at the time or afterwards than if he had smoked chopped hay or tea-leaves, and that the real reason for reclining when smoking is that neither the opium-houses nor even the dwellings of the poorer classes are furnished with tables and chairs, and that a divan can accommodate conveniently a larger number of smokers than any other simple arrangement of furniture which could be adopted.

Various opinions have been expressed concerning the actual effect of opium smoking; many hold that, in moderation, it is even beneficial to certain constitutions and that, as with wine and spirits, it is only its abuse which is deleterious; others consider that "chandu" smoking is absolutely harmless, inasmuch as they consider that all the narcotic principles of the drug are eliminated and volatilized by the process of burning, but as regards this view, it should be noted that the experiments of Dr. Kane, in New York, and of other medical men of late years, have proved that a readily traceable proportion of morphia does decidedly enter the system of habitual opium smokers. On the other hand, the numerous supporters of the Society for the Suppression of the Opium Trade hold that no words can adequately describe the misery and ruin which are produced by opium smoking, that it destroys the nerves, emaciates the body, and is one of the most fertile sources of destitution and crime; it has, however, never been clearly proved that the use of opium in moderation is the unmixed evil which the supporters of this theory hold it to be, and even when abused it does not appear to be nearly so pernicious in its effects as is the abuse of alcoholic drink in Europe; one of the most mischievous qualities with which it can fairly be taxed appears, indeed, to be that it exercises over many constitutions a somewhat fascinating influence, so that those who have once commenced opium smoking often have not the strength of mind to abandon it, but go on from day to day increasing the quantity they smoke as, from growing accustomed to it, its soothing effect on their nerves diminishes; in this respect also it may very well be compared with the effect of alcohol on habitual drinkers.

It has been stated that opium smoking kills 2,000,000 of Chinese annually. Mr. Robert Hart, Inspector-General of Customs in China, has, however, shown that the population of China is certainly over 300,000,000, and that the total quantity of foreign opium imported into the country amounts to about 100,000 chests, or about 10,000,000 catties of raw opium annually, and that when boiled down for smoking this quantity yields about 7,000,000 catties of "chandu": opium smokers consume about 3 mace ($\frac{6}{15}$ths of an ounce avoirdupois) of "chandu," and if we divide the total weight of imported "chandu" by the number of days in the year, and by the quantity which each average smoker consumes daily, we find that there are, in round numbers, above 1,000,000 smokers of foreign opium. The amount of opium produced in China is unknown, but assuming it to be equal to the amount imported, we should have another 7,000,000 catties, or sufficient for the annual consumption of 1,000,000 additional smokers. If these calculations are correct, there would only be about 2,000,000 smokers in the whole of China, or *two-thirds of* 1 *per cent.* of the population, and if this be the case, the number of deaths caused by opium smoking must have been very much exaggerated.

Few people are entirely unacquainted with the principal arguments which have been brought forward during the course of the controversy on the subject of the opium revenue of India, which has of late been carried on between the anti-opiumists on the one hand, and the advocates of the present system on the other. The anti-opiumists urge that the Government of India should at once withdraw from a trade which is distinctly immoral, inasmuch as it causes, according to them, the ruin and death annually of an enormous number of the Chinese, and inasmuch as it is in reality forcing on an unwilling people a drug which they detest; they advocate various schemes, one or the other of which would, in their opinion, enable the Government to sever their connection with the trade. Among other proposals are that the Indian Government shall cease to tax opium (or rather shall cease to place any restrictions on its production), that China shall be allowed absolutely to prohibit its importation, that the Indian Government shall prohibit the cultivation of the poppy, or at any rate prohibit the export of opium from Indian ports, and that if they do not do this, they should at least abolish the Bengal monopoly system, and thereby cease to be connected with an immoral traffic; lastly, it is proposed that the Chinese Govern-

ment should be allowed to fix the import duty on opium as high as they please. Against these proposals it is urged that the abolition of any tax or restriction on Indian opium would simply enormously stimulate its production throughout the country, and would enable the drug to be sold at a far cheaper rate than at present; the Chinese Government, moreover, could not effectually prevent the importation of opium, and any attempt to do so would cause smuggling on a large scale, with all its attendant evils, to be revived. Were the Indian Government to prohibit opium culture in British territory, the result would probably be that the amount produced in the native States, and the consumption of the drug by our own subjects in India, would be largely increased; moreover, the prohibition of the export of opium from our Indian ports would not be likely at all to diminish the amount consumed by the Chinese, inasmuch as the production in China itself is constantly increasing, and although the higher classes greatly prefer the Indian produce on account of its superior flavour, yet if they could no longer procure it, a great stimulus would be at once given to the imports from Persia and other countries, and the amount consumed would be quite as great as before. Were the Government to cease to monopolise the cultivation of opium in Bengal, and merely to impose an export duty as it left the country, they would, in the first place, be flooding India itself with large supplies of cheap opium, from which no revenue would be derived, while the quantity exported to China would probably be increased rather than diminished. The proposal that the Chinese Government should be allowed to fix the import duty as high as they choose seems to be the best, but it would not be likely to materially diminish the consumption in China, as smuggling would be certain to recommence at all points of the coast if the duty were fixed at a prohibitive rate.

After all, it seems doubtful whether any immediate alteration in the present system of collecting the Indian opium revenue can be effected; it has to be considered, in the first instance, whether the Chinese Government is really in earnest in its professed wish to prevent its subjects from obtaining the drug; and taking into consideration the enormous recent extension of poppy culture in China itself—an extension which is at least winked at, if not actually encouraged by the authorities—and the admission by more than one Chinese official that the real wish of the Government was to prevent the constant drain of silver from the country in exchange for the "vile dirt of the foreigner," this is at leas

open to doubt. In the second place, it has to be considered how so serious a deficiency as would be caused in the Indian revenues by the abandonment of all connection with the opium trade could be made good. It was very clearly shown by Major Baring, in his Budget statement for the year 1882–83, that should the Indian Government relinquish this important source of revenue, it would be absolutely necessary to provide some substitute for it, and this could only be done by increased taxation. It can scarcely be contended that it would be just to impose additional taxation on the poorer classes of India, in order either to attempt to wean the Chinese from one of their most popular indulgences, and one to which they have been addicted for hundreds of years, or to assist them in extending their own cultivation of the poppy, and so in keeping their silver in their own country.

NOTE.—A report by Acting-Consul Spence, which is just published in a Parliamentary Paper [C. 3,395 of 1882], is of importance as showing the healthiness of the inhabitants of Western China, where it is estimated that at least 40 per cent. of the whole male adult population smoke opium of native production. From the evidence contained in this report it appears that nowhere in China are the people so well off or so hardy as in Szechuen, and nowhere do they smoke so much opium. People with slow wasting diseases, such as consumption, are, if they smoke opium, apt to be classed amongst the "ruined victims" of hasty observers, and there are, no doubt, some whose health is completely sapped by smoking, combined with other forms of excess; but the general health and well-being of the Szechuen community is remarkable, and all travellers bear testimony to their capacity for work and endurance of hardship, as well as to the material comforts of life with which they surround themselves.

J. R. ROYLE.

SWIMMING.

FOR several years past the public has from time to time been furnished by the Registrar-General or by Parliament with statistical returns of the number of persons drowned annually in the United Kingdom. As long ago as 1875, in England and Wales the deaths from drowning were given as more than 2,500.

Two years later a Parliamentary return stated that such deaths in the rivers, canals, and lakes, *i.e.*, the inland waters, of England and Wales alone, amounted in 1877 to 2,662—a loss of life greater than it has cost the victors to win many a battle which has not been without its influence on the world's history. Another Parliamentary return recently issued informs us that, in 1880, there were no less than 4,044 deaths from drowning in the United Kingdom. These figures are simply appalling, and without going into the statistics given in reference to the places where these deaths occurred, and to the causes or circumstances connected with them, it may unhesitatingly be affirmed that the majority of the persons drowned would have been saved had they known how to swim, or if the knowledge of swimming were as extensively possessed by the community in general as it should be; while the reflection that the knowledge of swimming is comparatively easy of acquirement makes the reading of these statistics all the more painful. It may be admitted that of late years this knowledge has become more general, and that the voluntary agencies for its diffusion have been more or less successful in their work, and are deserving of unqualified praise for what they have both attempted and done. The Swimming Association of Great Britain has been a most successful organization; the London Swimming Club has been specially active in giving gratuitous lessons in the art; the London Schools Swimming Club, set on foot, we believe, by the School Board of London in 1875, has been instrumental in teaching thousands of children of both sexes to swim; while scores of other metropolitan and provincial swimming associations, not forgetting ladies' clubs, have done much to further the good work. But notwithstanding all that has been done, and the impetus given to the desire of acquiring the art of swimming by the performance of Captain Webb, of Channel-crossing fame, and of other public swimmers, both professional and amateur, the practical knowledge of the art is still lamentably circumscribed; and hence, as the season for pleasure-boating and bathing progresses, paragraphs with the painful heading "Death from Drowning," becomes of frequent occurrence in the papers.

Considering the fact that we are an insular and maritime people, with a fair amount of rivers, lakes, and ponds, apart from the "melancholy ocean" which surrounds us, it is almost of the nature of a national scandal that so few of our population are conversant with the art of swimming. Even in the Royal

Navy the number of men who can swim is proportionally small; and it would seem that almost the last question a sailor in our Mercantile Marine asks himself is whether, in an emergency, he could support himself in the water even for a few minutes. The same state of things exists in our Army, and, generally speaking, the art of swimming is but very sparingly cultivated throughout the country. It may be true that more interest is now felt in swimming than was the case a few years ago, and doubtless the feat of swimming the Channel, as performed by Captain Webb, gave an impetus to the acquirement of this useful accomplishment, while the increase of swimming clubs in London and the provinces has had a good influence in the same direction. But still the number of persons who are yearly induced to acquire the art is inconsiderable. Amid the numerous revivals of sports and pastimes, and of athletics in general, swimming has not received the attention it deserves; and the various attempts to place a number of swimming-baths on the Thames and other rivers have been more or less failures, notwithstanding the strong appeals for support made to the public, and the promise of assistance from official bodies. It is very strange how much apathy exists in this matter, though the exercise of swimming is in itself a most delightful one, to say nothing of the practical benefit derived from its acquisition. Though the majority of persons probably some time or other in the course of a twelvemonth risk their lives more or less on the water, they seem to argue that the chances are so great against their ever being drowned, that it is hardly worth while to learn to swim. It is a fact that not one out of every twenty persons who bathe in the sea, in our rivers and ponds, or frequent our public baths, ever cares to take the trouble to acquire the art of swimming. They seem contented with the pleasure of mere immersion in cold water during the hot weather.

There is perhaps some excuse for this unsatisfactory state of things in the fact that the facilities among us for acquiring the art of swimming are very meagre. The opportunities of learning to swim, even at the seaside, are almost as scarce as in the middle of Dartmoor or Salisbury Plain, and inland they are next to nothing. Only here and there an effort in the right direction is made. More than one Continental Government has thought it not beyond the scope of its duties to legislate for the encouragement of the art of swimming, particularly among soldiers and sailors; and at the present moment no one is allowed to bathe in

the open rivers of Germany, unless he has first obtained a certificate of his ability to swim. As a rule, we are averse to what is called "paternal government," but it is certainly a fair question whether our own Government ought not to take some action in this matter. If they did, there is but little doubt as to their being supported by the great weight of public opinion.

It is hardly an exaggeration to say that the question of swimming has become one of national importance, or at least of supreme interest from a humanitarian point of view. The advantages which would accrue if a knowledge of the art were acquired, as it might be, by the great bulk of the community, especially of the male sex, are many and obvious. In the first place the annual number of deaths from drowning, both in inland waters and along our coasts, would be reduced certainly by one-half, and probably by two-thirds, or even more. Every swimmer not only has it in his own power, under most circumstances, to save himself, but frequently is enabled to save others, as was most touchingly shown last summer, when a sister of the Clewer House of Mercy, without any other help but her own mastery of swimming and its accessories, dived into a pond and saved the life of a little child who had already disappeared below the surface. When we reflect on the foundering of the "Eurydice," of the "Princess Alice," and similar catastrophes of late years, it is painful to think how many sacrificed lives might have been saved had the proportion of swimmers been greater; and almost every week during the summer months we have instances of the value of the knowledge of the art, or the consequences of the ignorance of it. Every swimmer becomes a possible life-saver, and a probable teacher of the art to others. Fortunately the art, as we have said, is not a difficult one to be acquired by anyone, particularly by children and persons up to about twenty years of age. Very many can acquire it, even without instruction, and the teaching of it is comparatively easy, whatever system is adopted, or whatever style is aimed at. Indeed, when one style, say the old-fashioned breast stroke is mastered, a very few hints suffice for mastering the others, and what may be called the accessories of swimming, such as diving, floating, treading water, and so forth, more or less naturally follow. Strange to say that man is the only animal, with the exception of the camel, that does not swim as by instinct or natural gift; but how easily he may acquire the habit is shown by children, in some cases almost infants, on the Canton river, and generally among the Pacific

Islands, who take to water with as great facility as young ducks; and fortunately in this matter habit becomes a second nature, and it is an established fact that a person who has once learned to swim never forgets the art, even though he may only practise it at intervals of many years. Even occasional practice makes him almost as much at home in the water as on land, as unconsciously, so to speak, the art becomes, like bicycling and other athletic acquirements, a part of himself; and it may be added, as a further inducement to persons to learn to swim, that it is a fallacy to suppose that their clothing would act as an impediment to their saving their own lives, or those of others, as clothes, being of less specific gravity than water, actually increase buoyancy, though they may impede and retard the swimmer's movements. Among the minor advantages of swimming may be mentioned those of a sanitary and hygienic character. If swimming were more generally practised, there would be more frequent health-giving ablutions among the masses when facilities offered, and boys and girls, and men and women, would be enabled to indulge in a bodily exercise, which on all hands is acknowledged to be most conducive to muscular development, and beneficial to the general health of the respiratory organs.

Such being the advantages, among others, which would attach to a general diffusion of the knowledge of the art of swimming, the great and practical question remains as to the means to be adopted for bringing about this most desirable result. Unfortunately the facilities for bathing and for learning the art of swimming are, comparatively speaking, very limited, and where they exist they are more or less costly, and out of the reach of the great body of the public. The main point, then, is the increase of these facilities. There are a variety of suggestions which might be made in this direction. For instance, our great public and semi-public schools, and, indeed, all schools, whether for the upper, middle, or lower classes, might have swimming baths and instructors in swimming attached to them, when no river or other water is at hand. Our universities might institute a more thorough and systematic provision for the teaching of the art. Public bodies, such as corporations and others, might follow in the same direction, and establish floating and other baths within their jurisdictions. Public baths might have in all cases permanent teachers connected with them. Workhouses and pauper schools might have baths and instructors in swimming attached to them, as indeed several of the latter already

have. Swimming might invariably be part of the drill of our soldiers and sailors; and, in a word, facilities for bathing and acquiring the art of swimming might be supplied throughout the country. The question therefore arises whether it would not be most advisable for a special Act or Acts of Parliament to be passed dealing with the matter, and imposing on school trustees and governing bodies, on school boards, on corporations, and other local authorities, the duty of providing the facilities required, and thus very widely diffusing the knowledge of swimming throughout the country.

And yet further, in addition to definite legislation applicable to certain institutions, whereby facilities for bathing and the acquirement of the knowledge of natation might be increased, it may be suggested that possibly some legislative restrictions might be imposed on the letting of boats for pleasure purposes, and on the hiring of them by persons either unable to swim or practically ignorant of rowing and the general management of small craft. In the first place, then, no owners of boats should be allowed to let them to young persons unless they are in company with elders who appear to have a fair knowledge of rowing and boat management, or to elders without these qualifications. There is no more common sight on our waters than boatloads of mere children and incompetent persons, among whom "larking" predominates, and few have the courage to protest against acts of bravado and to show reasonable fear of accidents. Of course it may be said that it would be impossible for letters of boats to decide as to who are "young" persons, and who "incompetent," and that the desire to let their boats would naturally obscure their judgment. Still we hold the principle suggested is a sound one, and means might be found to enforce it in practice. In the second place, owners of boats should not be allowed to let them, except to persons who can produce a certificate of having passed an examination, as it were, in swimming before some properly constituted authority, empowered to grant passes or certificates. To this, again, all kinds of objections might be raised, and we freely admit the great difficulty there would be in practically carrying out such a regulation. Many would, of course, object to it on the ground of "infringement on the liberty of the subject," just as they object to compulsory vaccination and to other laws and regulations which "subjects," in the exercise of their "liberty," have voluntarily caused to be enacted for the protection of the community in general. Fortunately, however, thi

class of objectors is as small as it is noisy and unreasonable, and what we may term compulsory swimming might, we think, in some reasonable way be enforced. It might be further urged that certificates might easily be borrowed by non-swimmers from friends who are swimmers, but this might be to a great extent prevented by the holders of certificates being required to sign their names on them when they obtain them, and to give their signatures to boat-letters when requested, so that they might be compared with the original. This is a plan adopted very frequently in reference to season tickets for places of amusement and so forth. But whatever the difficulties in the way of carrying out generally the suggestion made, we still think it well worth consideration; while the further question as to what tests should be imposed on candidates for certificates, who should be the authorities for granting them, what the penalties for infringement of regulations, and so forth, are rather matters of detail, and would be subject from time to time to alteration and improvement. At all events, "compulsory swimming" before boating is allowed might be insisted on in all schools, colleges, universities, and public institutions in which the inmates or members are more or less under authority. And we must not forget that this system in reference to some such institutions is already in vogue. At Eton, for instance, it has been so for generations, and so serious an infringement of school discipline is it treated there that very seldom indeed does a boy venture into a boat before he has "passed" the necessary examinations in swimming before masters of the school who undertake this matter. The success of the regulation is undeniable, as a death from drowning is almost unknown, the case which happened last summer resulting not from a want of a knowledge of swimming, but from the sufferer unfortunately becoming entangled under the boat in the tiller ropes. The University authorities have recently established a somewhat similar regulation at Cambridge. What can be done at one institution can be done at all; and if the suggestion we have briefly sketched were carried out generally, the result would be that an additional and very strong inducement to acquire the art of swimming would be supplied; parties of pleasure would not so often be turned into parties of sorrow; nor homes of happiness be so often converted into houses of lamentation and woe.

J. J. Manley.

THE ART SALES OF 1881–82.

A FEATURE in the life of London which has greatly developed of late is its Art Sales. In spite of the fact that there has been—if we may trust what everyone says—a depressed state of business in England for some years past, buyers of pictures and bric-à-brac are more numerous and more willing to spend money than ever. Prices of all good things of this kind get higher and higher, and purses of collectors apparently deeper and deeper.

Wonder is often felt at the enormous sums which are given for pictures, porcelain, and cabinets. That they are constantly bought at a price far exceeding what might be considered their intrinsic value—if there be such a thing as intrinsic value—no one can doubt. Porcelain, for instance, as good for all purposes, including the gratification of the "quiet eye," as the best antique specimens, might be produced new in many of our factories at the present time; but if two pieces, similar in every particular except that one was a genuine original and the other an avowed copy, were to be put up for auction, there is no doubt that the original would fetch from five to twenty times as much as the equally good piece produced in imitation. There is, in fact, such a thing as a "museum value" for objects of art, to which their history and the fact of their being links in a chain of art development contribute; and this "museum value," as it may be called, increases with the growth of appreciation of art, and with the growth of a fashion for artistic possessions. How great these growths have been during the last few years is a matter of common observation.

Art Sales in London are coincidental with the "season," or nearly so. They begin about November at the earliest, but do not set in strong till the following month; after July they cease entirely for at least three months. The principal scene of art auctions, as every one knows, is at Messrs. Christie and Manson's, in King Street, St. James', a firm of considerable age and of unimpeachable standing. Nothing known to be spurious is ever admitted into an auction at Christie's; there have been several cases, even during the last season, where discoveries as to the non-authenticity of pictures or articles of vertu, having become known to the auctioneers at the last moment, have been publicly stated to the bidders around the rostrum. Hence the high standing

and much of the fame of these rooms. The same might be said for the sales at Messrs. Sotheby and Wilkinson's and a few others. It does not follow, however, because everything sold at these auctions is, so far as the skilled auctioneers who officiate know, a genuine article, that buyers do not often make bad bargains. The judgment of amateurs is not seldom at fault, and if their purses are full, they are frequently carried away by the enthusiasm of competition.

Most of the features of these auctions were illustrated at one or other of the sales of the season 1881–82, which it may be of interest, for once, to review in these pages by aid of chronicles which have appeared in the *Artist*, and other papers, on account of its exceptional importance.

Making all due allowance for the fact that it is chiefly the best of past productions which come into the great London art sale rooms, there seems no reason to doubt that the value of objects of art has risen very greatly during the last twenty-five years; and if we go further back, as in certain cases we can, by the assistance of recorded prices in the last century, the increase will be found prodigious.

As illustrations of the immense increase in the market value of certain classes of porcelain, may be quoted the following amongst other facts. A well-known figure of Mrs. Ryot as Kitty Clive, made in the Chelsea factory, was sold, when first it came to the hammer in the last century, for 11*s.*: a few years back it fetched 31*l.* A Chelsea tureen in the shape of a rabbit, originally worth about 50*s.*, will now bring from 30*l.* to 40*l.* In December, 1769, at the six days' sale, "by Mr. Christie at his great room, Pall Mall," of the produce of the Worcester manufactory, a set of three hexagonal jars, of rich mazarene blue and gold, enamelled with birds and insects, was bought for 8*l.* 15*s.*: such a set would now be a bargain at 300*l.* Cups and saucers which sold then for 7*s.* 6*d.*, 15*s.*, and 21*s.* the dozen, would now find eager purchasers at two and three guineas each.

Some of the prices fetched by artistic plate during the month of December, 1881, were such as to cause even the dealers in these articles, who are seldom surprised at anything, to wonder what could be the reason. For instance, a silver knife and fork, with an amber mouthpiece mounted in enamel sold on the 9th of that month for 97*l.* 13*s.* It has been suggested that there exists an illicit demand for some of these articles, created by certain foreign silversmiths, who intend using them as patterns for the

manufacture of duplicates. When a clever manufacturer sees an article sell for nearly 100*l.* which he could produce for 15*l.*, there must be a great temptation to forge, and for this purpose to secure the original. An instance, however, occurred during the same month of a decrease in value. A handsome old cabinet, seven feet high by three feet nine inches wide, made in the form of a temple of tortoise-shell, was sold in the Bernal sale of 1855 for 108*l.* to Colonel Sibthorpe, M.P.: it now went for 90*l.* This was not a serious decline, but may be so considered when we recall the general tendency which exists towards a rise in prices. Perhaps the fact that the piece was now sold without the prestige of forming part of a great collection may account for the somewhat smaller figure at which it was knocked down.

The vicissitudes of bargains were further illustrated in this month's dealings at a sale of Dresden and Sèvres china on the 15th, when a pair of oval Sèvres dishes, about 18 inches by 14 inches, went in the auction for 12*l.* 12*s.*, and directly after the sale were disposed of in the trade for 40*l.* Circumstances which it is scarcely an exaggeration to call accidental will affect the produce of an Art Sale to a most important extent.

Amongst the other sales of this month was one of Oriental art work, including some hundreds of the little grotesque trifles from Japan, called *netsukies*, or buttons. These odd little pieces of ivory, about 1½ inches square, are often not only skilfully carved, but designed with much spirit, with original and grotesque conceptions, illustrating Eastern fables and legends. The makers of these in Japan are artists and sometimes men of fame.

There were some signs in the same month of a revival of the demand for Italian medallions, a collection of which, belonging to Don Allessandro Ruspoli, of Rome, was sold by Messrs. Sotheby, Wilkinson, and Hodge. The demand had no doubt received a fillip from a series of letters which had not long previously appeared in the *Times* upon this branch of art, by Mr. J. C. Robinson, a gentleman who appeared at the sale as an extensive buyer. On this occasion a medal of Jacopo Malatesta, only 1⅝ inches diameter, fetched 9*l.* 15*s.*; one of Jacob Petrucci, supposed to be by Pastarino, 2⅛ inches diameter, 15*l.* 5*s.*; while a medallion, 3½ inches in diameter, of Rafael Maffei, of Volterra, by an unknown artist, was sold for 200*l.*, the buyer being Mr. Robinson.

The second month of 1882 was marked by a *cause célèbre* in connection with Art Sales—the suit of Wertheimer *versus* Goode.

The subject of litigation was a pair of Sèvres vases, which might be prosaically described as a couple of flower-pots eight inches high, with the handles broken off, the edges chipped, and the feet ground down. Both parties were dealers, and the object of the plaintiff, Wertheimer, was to recover from the defendant, Goode, the sum of 1,100*l.* for this pair of vases and a smaller similar piece. The case is a good illustration of the vicissitudes of porcelain. As related, and not contradicted, the story of the vases is as follows:—In a revision by Mr. Chaffers, an expert, of Lord Hastings's collection in 1880, the two specimens were condemned to elimination as unworthy, and sent to the auction room for unreserved sale. They were, however, judged by Mr. Wareham, a dealer, to be worth 425*l.*; and he secured them at that price. A few days after he was asking 800*l.* for them. They did not immediately go; and Mr. Werthiemer, also, as already stated, a dealer, arranged with Mr. Wareham that the vases should be sold to a partnership of Wareham and Wertheimer for 500*l.*, and sold on joint account at the best price that could be obtained. Mr. Goode, again a dealer, but also an enthusiastic collector of old Sèvres, saw the vases, and agreed to give, for them and a smaller third piece, 1,100*l.* Misunderstandings ensued, and Mr. Goode repudiated his purchase; Wertheimer, by the suit under notice, sought to enforce the bargain. Contention being thus begun, the character of the vases was attacked; and when the case came on, their spuriousness, or partial spuriousness, was pleaded by Mr. Goode, the decoration being more especially questioned. At the trial both parties were represented by some of the foremost men at the bar; and while, on the one hand, many of the leading London dealers declared that the vases were genuine, and worth the price charged, a number of the chief china manufacturers, with their managers and artists, gave their opinion against the genuineness of the decoration. Mr. Chaffers, the expert, stuck to his opinion (which, however, was not shared by others) that the things were entirely spurious. In this state of matters, the jury, holding, probably, that Mr. Goode, as himself a dealer and expert, must take the responsibility of his own undoubted bid for the vases, found a verdict against him for the amount claimed. For the present, then, the history of these two Sèvres flower-pots closes: there may be, however, and probably is, a sequel to come.

During this month a collection of engravings and etchings, left by Lord Beaconsfield, but made chiefly by Isaac Disraeli, was

brought to the hammer. It had, however, little interest apart from its association with the deceased statesman.

There was considerable animation, and some incident, both in the picture market and in the bric-à-brac world during the month of March. To take the pictures first, a striking illustration occurred of the money-value of a good opinion expressed by the critic Ruskin. Of a water-colour fruit-piece by William Hunt, Mr. Ruskin had said in print two years before:—"The grapes are the vintage of Rubens, and the shadows are the darkness of Tintoret. It is wholly free from prettiness of manner, and in force, spring, and succulence of foliage it is as if the strength of nature were in it rather than that of human hand." With this testimonial, the piece fetched 225*l.*

Amongst other pictures sold by auction were some by J. C. Hook, R.A.: of these, "Home with the Tide" brought 1,333*l.*; "A Sailor's Wedding Party," exhibited at the Royal Academy in 1863, 1,060*l.*; "Gathering Seaweed: coast of Brittany," painted in 1865, brought 613*l.* In would often be interesting to know how much, if any, of the sums paid in such cases goes to the painter. In most instances, no doubt, nothing; he has sold his works long ago, perhaps for a fifth part of what is now being given for them.

Turning to the bric-à-brac market, we find the sales of the month marked by the disposal of the Popham collection, the leading incident of which was the purchase of a celadon vase on behalf of Sir Richard Wallace, for the large sum of 2,300*l.* This is believed to be the highest price ever given for a single jar. Another large price was that given for a set of old Japanese jars, 40 inches high, which fetched 440*l.*: while amongst the Sèvres, a centre vase brought 530 guineas, and a pair 825 guineas, the height of these latter specimens being about 16 inches; and yet it was held by the dealers that they went very cheap.

The salient event in the art market of April, 1882, was the bringing under the hammer of a collection of Tassies. What, it may be asked—for the vogue which they once had no longer exists—is a Tassie? J. Tassie was a Scotchman, who made a special pursuit, and a lucrative business, of producing, with great neatness and skill, casts of ancient and modern gems and medals in wax, vitreous enamel, and other substances. He carried on his business in Compton Street, Soho, and left the goodwill, with a collection of 10,000 casts, to his nephew, William Tassie, who increased the stock to 20,000 copies, and retired, since which this

branch of art, or manufacture, has not been actively pursued. There is a Tassie room in the Scotch National Gallery, with a complete collection; the rest of the stock went to a clergyman named Vernon, whose executors now offered them for sale in detail. There was, it is believed, a very fair result to the vendors.

One of the great picture sales of the season was that of the Wyfold Court Gallery, or collection, which belonged to the late Mr. Edward Hermon, M.P.; this was brought under the hammer on the 13th May by Messrs. Christie. The occasion was marked by the reappearance, as a purchaser, of Mr. Holloway, the proprietor of the famous pills and ointment, who had created a sensation the previous year by his extensive picture purchases. Mr. Holloway, it seems, is spending the money which has accrued to him from the sale of medicaments in building and establishing, with lavish expenditure, two institutions near Virginia Water, one being a college for female education, the other a retreat for the mentally diseased. He has been buying pictures to form a gallery for one or other of his erections. At one of the chief picture sales of 1880 he bought under the name of "Thomas"; on the occasion under notice he figured as "Mr. Martin." The Wyfold Court collection contained some of the foremost works of the present English school, including two large pictures by Mr. Edwin Long, R.A.—"The Babylonian Marriage Market" and "The Suppliants." The former of these was the picture of the year in the Royal Academy exhibition of 1875.

Amongst a throng which had visited the sale rooms for some days before to view the pictures much speculation had been rife as to the price these and other leading works would realise; but few expected the large figures for which they fell to "Mr. Martin." This gentleman's selections, and the prices he paid may be recited: for "A Dutch Vessel Aground," painted by E. W. Cooke, R.A., 42 inches by 66 inches, exhibited in 1865, and sold in the late Mr. Leaf's sale for 430*l.*, "Mr. Martin" gave 535*l.* 10*s.*; for "Taking Rest," by T. Faed, R.A., a cottager with baby, 33 inches by 25 inches, the same purchaser gave 745*l.* 10*s.* "Mr. Martin" also bought Mr. Frank Holl's picture "Newgate: Committed for Trial," exhibited in the Royal Academy in 1878, 60 inches by 82 inches, the price being 802*l.* 10*s.*; two other of his selections were by J. MacWhirter, A.R.A., "Moonlight," a coast scene, 39 inches by 65 inches,

which fell to him for 283*l.* 10*s.*, and "Spindrift," another coast scene, for 315*l.* A Pettie, 48 inches by 63 inches, entitled "A State Secret," exhibited in the Academy of 1874, and representing a cardinal burning a document, was knocked down to "Mr. Martin" for 1,050*l.* But the most important purchases were those of Mr. Long's pictures. "The Babylonian Marriage Market" is a canvas measuring 66 inches by 120 inches, too large to be placed, in the auction room, upon the customary easel. Received by the crowd in the room with a round of applause, it elicited a first bidding of 2,000 guineas, from which it rose by bids of 500 guineas rapidly to 4,900 guineas. At this point there was a pause; then 5,000 guineas was bid in two parts of the room, and the bidding again began to run up by fifties, breaking out into hundreds, till 6,000 guineas was reached. Then came a further 100, an advance upon that to 6,150; and finally the hammer fell at 6,300 guineas to the bid of "Mr. Martin," amid loud cheers. The price paid to the artist for this picture is said to have been 1,700 guineas. "Mr. Martin" was the successful bidder for Mr. Long's other picture in the sale—"The Suppliants"—which went for 4,305*l.* Another remarkable point in this sale was the price of a picture by W. P. Frith, R.A.—"Altisidora pretending Love for Don Quixote"—which the auctioneer stated had cost Mr. Hermon 2,000 guineas: it sold now for 504*l.* During the same month, however, the same painter's original sketches for the series entitled "The Race for Wealth," each measuring 12 inches by 15 inches, fetched 693*l.* Mr. J. E. Millais's "Effie Deans" (the smaller work, 48 inches by 28 inches, painted for engraving), sold for 892*l.* 10*s.*; and "Married for Love," by Marcus Stone, fetched 514*l.* 10*s.* Other high prices were 798*l.* for a picture by J. Linnell, senior, 60 inches by 40 inches, entitled "Returning from the Cornfield"; 996*l.* for J. C. Hook's painting, "A Little Blue Bay," exhibited at the Royal Academy in 1876; and 1,155*l.* for the same painter's canvas entitled "The Coral Fisher of Amalfi."

At one of the bric-à-brac sales this month a pair of old Dresden figures, representing a lady and a gentleman, the former in the hooped dress of the last century, though only 6 inches high, produced 252*l.* An instance also occurred of a piece of cabinet work fetching less than its expected figure. This was a Louis XVI commode, by Riesener, authenticated by the noted maker's name stamped underneath; its value had been estimated by experts

at 2,000 guineas; it fell for 1,500. The fact of a work being chosen for representation in an art treatise often enhances its value: thus a grotesque Dresden teapot, engraved in Marryatt's work on pottery and porcelain, fetched at one of this month's sales 28*l*. Some simple Sèvres flower-pots, horseshoe pattern on white ground, realised on the same occasion 90 guineas, 100 guineas, and 105 guineas the pair. An excellent imitation, in the form of two small flower-pots by Coalport, fetched only 3*l*. 12*s*. 6*d*. Towards the close of the sale some Minton imitations of the well known vaisseau-à-mat were disposed of at a decline; the pair for which it was stated Minton had charged 250 guineas being knocked down for 110 guineas. By a change in the same adverse direction, a Worcester vase, 14 inches high, which once cost 200 guineas, fell to a bid of 80½ guineas.

The season of 1882 will be memorable for the great sale, or rather sales, by which the Duke of Hamilton dispersed the ancestral art treasures of Hamilton Palace. This commenced on the 17th of June, and comprised pictures and bric-à-brac, sold on this and other dates; also books, with which the present article is not concerned.

To the auction of the Dutch and Flemish pictures of the Duke, representatives came from France, Brussels, and the United States; Mr. Burton and Mr. Robinson watched the proceedings on behalf of our National Gallery; Mr. Doyle was there for the National Gallery of Ireland; the Duke of Westminster and Lord Rosebery were represented by agents, and there was a great gathering of London dealers, including Messrs. Agnew, McLean, Graves, Martin Colnaghi, Dowdeswell, and Mendoza. Positions in the auction room were reserved by ticket, unprivileged spectators filling up the remaining space to the last yard. Knots of artists and experts gave character to the gathering. Among the amateur collectors Mr. C. Beckett Denison was prominent. It must suffice to record a few of the purchases.

A portrait by Van Dyck, of Charles I, was bought for 808*l*. 10*s*., by M. Sedelmeyer, of Paris. A Holbein portrait of the Lord Protector Somerset, in a black furred dress and cap, and wearing a chain, with a massive ring on the left forefinger, went for 514*l*. 10*s*., to Mr. White, presumably for the Duke of Westminster. Mr. Beckett Denison's first purchase was an excellent specimen of A. Van der Neer, a view of a Dutch riverside town, by moonlight, for which the purchaser, boldly bidding on

his own account, gave 278*l.* 5*s.* Shortly afterwards came Van Dyck's full-length portrait of Henrietta Lotharinga, Princess of Phalsburgh. The bids for this progressed amid stimulating thumping of sticks and umbrellas on the floor, and the hammer fell at two thousand guineas to Mr. Davis, for the Earl of Rosebery.

Now Mr. Burton came forward for an alleged Civitta, in behalf of the National Gallery. Hendrik de Bles, called "Civitta," is rather a scarce painter. The National Gallery contained already two of his works. The picture now offered was one of "St. Jerome in a Cave." Its attribution to Civitta is doubted, but not its value. Mr. Burton secured it for 493*l.* 10*s.*, which was his only purchase on this occasion. Mr. Denison contested with Mr. Agnew the purchase of W. Van der Velde's marine picture "A Calm," with a yacht at anchor, and a man-of-war saluting in the distance, which he finally obtained for 1,365*l.* A portrait by Rubens of his first wife, Elizabeth Brandt, at the age of thirty, an altar scene in background, 46 in. by 36 in., was first put up at 500 guineas, but rose speedily, and was knocked down to Mr. Whitehead, presumably for the Duke of Westminster, for 1,837*l.* 10*s.* "The Loves of the Centaurs," a notable Rubens, rose steadily from 500 guineas to a final bid of 2,100. This picture was sold in 1802 for 273*l.*, and in 1810 for 640*l.* 10*s.* The highest price but one was given for a watermill picture by Meindest Hobbema. Though hardly in the best condition, this picture fetched 4,252*l.* 10*s.*, the buyer being M. Sedelmeyer. The second of Albert Durer's portraits of himself was bought by Mr. Rutter, of Paris, for 388*l.* 10*s.* A miniature by Holbein representing Lord Dacre as a Knight of the Garter, only 6 inches by 4 inches, brought 89*l.* 5*s.* For an Ostade, interior of a cabaret, the biddings began at 250 guineas, and reached 1,837*l.* 10*s.* The great work of the day was "Daniel in the Den of Lions," by Rubens. Mr. Denison was the purchaser of this at 5,145*l.*; many had expected it to run up to 7,000*l.*

On Saturday the 24th came on the Italian pictures. Mr. Burton was to the fore for the National Gallery, as were also two agents of the French Government. It is believed that Mr. Burton secured every picture he had decided upon bidding for. The great contest was over a large work of Botticelli, the "Assumption of the Virgin," which was acquired for the nation at 4,777*l.* 10*s.* A French government agent contested this up to 4,725*l.*, though only authorised to give 50 guineas less than this,

but Mr. Burton offered 50 guineas more and secured it. This is a most remarkable work, and is now on view in the National Gallery.

The bargain of the day was a Tintoretto, "Christ Washing the Disciples' Feet," a large gallery work by this noted painter, measuring 79 inches by 160 inches, and containing many life-size figures. Being in a very dirty condition, with a seam across the middle, it had been disregarded, except by a few experts, and it was knocked down, without much competition, for 157*l.* 10*s.* to a gentleman who, to avoid arousing rivalry, had been asked by Mr. Burton to bid for him. Another picture, "The Story of Myrrha," by Giorgione, was obtained by Mr. Burton, for what was held to be a cheap price, 1,417*l.* 10*s.* It is believed that Messrs. Agnew, the dealers, were offered a commission to buy this at any price up to 5,000 guineas, but declined to stand in the way of the representative of the National Gallery.

For the bric-à-brac of the Hamilton collection some truly sensational prices were given. Many of the articles had historical associations, as well as being of precious material and the highest workmanship. On the third day of the sale, three pieces of furniture brought over 15,000*l.* These were a suite consisting of a secrétaire, commode, and writing table, all made for Queen Marie Antoinette, by Riesener; of unquestioned authenticity, and lovely workmanship. They were exhibited in 1862 at South Kensington. The secretary, 4 feet 9 inches high and 3 feet 6 inches wide, brought 4,620*l.*; the commode, 4,305*l.*, and the writing table, oblong, 2 feet by 1 foot, standing 2 feet 6 inches high, 6,300*l.* They went to three separate purchasers. The prices given for the secrétaire and commode, it is calculated, were three or four times the original cost to the unfortunate French queen; that of the writing table was in a higher proportion. On the whole the figures, high as they were, hardly reached the prognostications of the learned in such matters. Nor are such prices for furniture an entirely modern feature of social life. It is recorded that Cicero paid a million of sesterces for a table (about 9,000*l.*); and that two others, which had belonged to King Juba, were sold at auction for over 10,000*l.* The passion for bric-à-brac is historical.

Much remark was caused at this sale by some of the prices given by Mr. Beckett Denison, an amateur, who insisted upon not employing an agent, and is believed to have paid for his courage. For a little pedestal cabinet, by Buhl, this gentleman

was led to give 2,200 guineas! The same purchaser paid 210 guineas for a metal gilt chandelier for 16 lights, believed to be an imitation, and if so, worth about one-fourth of that sum. A chandelier of similar make, but much smaller, and of undoubted originality, brought 400 guineas.

The Hamilton sale did not entirely monopolise the incidents of the month's art auction. One of the most remarkable of these was the sale by Mr. Ruskin, the well-known writer on art, of a small painting by the French artist Meissonier. The subject was Napoleon I, in the campaign of Paris, the size only 12¼ inches by 9¼ inches. It represented Napoleon, in his grey overcoat, white buckskin breeches, and white waistcoat, mounted on a white horse, looking sternly out on a battle-field. The work was painted as a commission from Prince Jerome Napoleon for about 600*l.* Some years ago Mr. Ruskin bought it from Mr. Wallis, a dealer in whose hands it was, for 1,000 guineas. Last year Mr. Ruskin wanted money for carrying on his new museum at Sheffield, and sent this work to Christie's, to be sold without reserve. A report of the sale says it soon became evident that the contest lay between its former possessor, Mr. Wallis, and Mr. Arnold, of the firm of Arnold and Tripp, Paris. There was a pause, after a series of spirited advances, at Mr. Arnold's offer of 5,700 guineas, and everyone present thought this must win, but Mr. Wallis presently bid 5,800 guineas, and no further response being made to the twice slowly repeated challenge of the auctioneer, the little work came again into Mr. Wallis's possession, at a price which is equal to about 56*l.* the square inch. Shortly after its purchase this little gem was taken, by desire, to be seen by the Prince and Princess of Wales. It is now the property of a wealthy collector in Paris.

The Hamilton sale continued to occupy the field till the end of the season, no other art auction of any importance being ventured upon at the same time. On the whole, the pictures left to the last were, with certain exceptions, of less importance and lower character than had been anticipated. They were chiefly of the Italian school. Of the four great pictures in the catalogue of the 1st July the first was a large altar-piece of "The Circumcision," a noble masterpiece of Luca Signorelli, the forerunner, in a certain sense the master, of Michel Angelo. This is 8 feet 6 inches by 6 feet, with ten life-size figures, and the high priest in the centre, standing before the altar. Mr. Burton, of the National Gallery, again met his French rival, Mr. Gauchez, in

competition for this, and finally obtained the work, amid great applause, for the moderate sum of 3,150*l.* Another acquisition for the National Gallery was a portrait, 23 inches by 18½ inches, of Ludovico Cornaro of Venice, described in the catalogue as by Titian, but when put up accepted as by Domenico Theotocopuli. This is the first work of this artist secured for the national collection. For the National Gallery of Ireland were obtained some well-selected works; a rare example of Antonello da Messina, a portrait of a youth, in a crimson dress, bearing the authentic signature and dated "Castellino 1474, Antonellus Messanus me pinxit," on a panel 12 inches by 10 inches, was knocked down to M. Sedelmeyer, of Paris, for 514*l.* 10*s.* amid a disappointed silence, it being greatly desired for the British national collection. The "Boy with the Hornbook" or "Laughing Boy," 15½ inches by 13 inches, was also let go; though much desired for the National Gallery, it went, after a few bids, to Mr. Winkworth for 2,205*l.*

The dispersion of the pictures of this collection was completed on the 8th July. The work this day which excited the most attention, and ultimately found its way into our national collection, was the life-size full-length "Portrait of Philip the Fourth," by Velasquez. For this the price was much run up and the sum of 6,300*l.* paid. It is a genuine canvas, associated with a great name, and was only obtained by Mr. Burton in vigorous competition with a French and an American agent. The only purchase for the National Portrait Gallery from this sale was made on the same day; the director, Mr. Scharf, after a contest with the French Government, secured the large historical portrait piece of the eleven English and Spanish Commissioners for the Treaty of 1604, erroneously catalogued as by Juan Pantoxa, and probably the work of Mark Gheerardts, at the sum of 2,520*l.*

There were many paintings of no great value at the end of the Hamilton catalogue; but most of them fetched large prices, and it is thought that purchasers may have slight reason in the end to congratulate themselves upon some of their lots, unless the prestige of having been bought in "the great Hamilton sale" sustains their value.

The fifth and last portion of the sale of paintings consisted of 208 miniatures, and as a rule the prices were again above the mark likely to be obtained under normal circumstances. The highest price of the day was given by Mr. Joseph, a West End dealer, for Hilliard's tiny portrait of James I. It is in its

original case, enamelled with the royal cypher in diamonds, and has an openwork border set with precious stones. The amount was 2,835*l.*, which can hardly be accepted as anything but the effect of the prevailing recklessness which characterised this period of the proceedings.

At a price not less unusual, the six small whole length portraits by Janet, in a tortoiseshell frame, of Henri II, Henri III, Charles IX, Catherine di Medici, Le Grand Dauphin, and Claude de France, went to Mr. King. He paid 1,758*l.* 15*s.* Very few of the miniatures sold for less than 5*l.*: many went for from 20*l.* to 30*l.* each. Comparing the prices with those at previous sales of miniatures, it may be recited that in the Strawberry Hill sale, 100 miniatures were sold for 1,745*l.*, while we had now 200 bringing no less than 13,349*l.*

On the whole there is no doubt that the furniture constituted the best section of the treasures disposed of at this great sale. The extravagant taste of Louis le Grand, the refinement of the Marie Antoinette period, and the pseudo-classicism of the Napoleon era, with various gradations of style, were all well exemplified. In the concluding portion of the sale of the bric-à-brac enormous prices were again given. It must suffice to quote a very few: 9,450*l.* was given for an ebony commode, 4 feet 4 inches by 2 feet, with inlaid panels of lacquer and various enrichments, bearing the monogram of Marie Antoinette; the same large price for a Louis XVI secrétaire of the same character, measuring 3 feet 7 inches by 1 foot 4 inches, and in height 4 feet 9 inches; 5,460*l.* for another Louis XVI cabinet, 5 feet 6 inches by 1 foot 5 inches, and in height 5 feet 1 inch; lastly, a Louis XIV armoire, by Buhl, 9 feet 6 inches high, realised the enormous sum of 12,075*l.* A silver cup in the same day's sale fetched 3,090 guineas!

The total amount realised by this great sale, exclusive of the library, was 397,567*l.* Of this sum it is believed that one buyer, Mr. Beckett Denison, the amateur already mentioned, spent about a fifth part, in large and miscellaneous purchases. Lord Rosebery and two of the Rothschild family, it is reckoned, were buyers to the extent of nearly one-third of the whole amount.

With this colossal sale finished the art auction history of the season 1881–82 a season probably in this respect unprecedented.

JOHN CROWDY.

SALT—ITS MANUFACTURE AND CONSUMPTION.

The manufacture of salt in the United Kingdom is a very interesting and important industry, though the salt-producing area is comparatively small, and mainly confined to two districts, one in Cheshire and the other in Worcestershire. Salt was produced from the brine-springs in these districts at a very early period of our history, and it would seem that all places where such springs or brine-pits existed were called by the name of *Wich*, a termination that still distinguishes most of the salt towns at the present time. The name Droitwich, it seems, was originally *Wich*, and it is supposed that the prefix *Droit* was given to designate a certain legal or allowed brine-pit. In Staffordshire, at Shirley-wich, and Weston-upon-Trent, brine has been used for salt making from early times, as also in Somersetshire, Westmoreland, Durham, Lancashire, and Yorkshire; but in these latter the brine was either weak, like that occasionally met with in coal mines, or was situated where fuel was scarce, so that it was not much noticed. Cheshire is now the great seat of the salt trade, but the salt district in that county is confined to the basin of the River Weaver, and chiefly to the locality between Winsford Bridge and Winnington, though in the Valley of the Wheelock, a tributary of the Weaver, in the neighbourhood of Sandbach and Middlewich, it is also manufactured.

Salt is obtained either in a solid state from *rock-salt* mines, or from the evaporation of the water from the brine-pits or springs, and though the latter have been worked from the earliest periods in the history of this country, part of the pay of the Roman soldiers being in salt, giving rise to the word *salarium*, "salary," the deposits of fossil or rock-salt were not discovered till the year 1670, when in the process of searching for coal in Marbury, about a mile to the north of Northwich, a stratum of rock-salt was hit upon, about 30 yards thick, and about 34 yards below the surface of the ground. In 1779, rock-salt was discovered near Lawton in three strata, with beds of indurated clay between them, the lowest stratum producing the purest salt. In 1781, the owners of the Marston Mine at Northwich instituted lower sinkings, which resulted in what is now known as the "bottom of the bed" of rock-salt. The old shaft by which the bottom bed was thus proved still remains, and the workings that were made from it in the bottom bed still form a part of the

present Marston Mine; but the work in the bottom mine has long been carried on by shafts sunk direct from the surface.

In Ireland, rock-salt was discovered at Duncrue, near Carrickfergus, in 1851, and has been worked since that time. In Yorkshire also in the year 1863, at Middlesbrough-on-Tees, rock-salt was found in a bore-hole that was being put down for fresh water, at a depth of 431 yards. The sites of most, if not of the whole, of the old rock-salt pits appear to be known, and about forty old workings are now closed. The rock-salt pits now open in the United Kingdom are about twenty-five.

About 230 miners are employed below ground at Northwich, and 36 at Winsford. The system of working the mines appears to have varied very little since the beginning, but the size of the pillars which support the roof between them has been a moot point. An old plan, dated 1786, is in existence at Marston, showing the top and bottom workings of the Marston Mine as they existed at that time. The size of the pillars in the top bed is about 6 yards by 4, and in the bottom bed (which was then only being commenced) the shaft pillars were set out from 10 to 12 yards in width. The workings in the bottom bed at the Marston Mine are now the most extensive in Cheshire. They are in an oval form, 640 yards long, by 820 broad, extending over about 36 statute acres. There are altogether 131 pillars in the mine. The height of each pillar is about 5 yards, and they are of various breadths, lengths, and distances apart. Several are 8 or 9 yards square, and 25 yards apart, which seems scarcely sufficient, as some of these are cracked at the corners. The present ones are 10 yards square, and 25 yards apart. The thickness of the strata which they have to support from the base to the surface is about 110 yards.

In the year 1872 the Japanese Ambassadors and their suite, accompanied by several leading members of the Salt Chamber of Commerce, paid a visit to the Marston Mine. The occasion was most interesting, and the Ambassadors, in a document to which their signatures were appended, expressed themselves highly delighted at what they had seen and learnt. Occasionally as many as a thousand persons from Manchester and other manufacturing centres make an excursion to the salt district of Cheshire, and descend a mine, thoroughly illuminated for the occasion, long "streets" being fitted up with stalls and refreshment bars. Music is also plentifully supplied, and as many as 400 persons have been known to join in one dance in these crystal halls.

The "pits" from which the *brine* is obtained for the manufacture of white salt by evaporation are of two kinds, namely, the "springs" which come from the top of the rock-salt, or, as it is locally termed, the "rock-head," and old salt mines which have become inundated, and in which the water is consequently saturated. It is quite impossible to obtain any list of the ancient brine-pits, but of known brine-pits now closed there are over seventy, perhaps even a hundred, in the United Kingdom. The number of those at present worked, including "rock-head" brine and old rock-salt pits, is over fifty. In Camden's time, the method of raising the brine was by human labour. He says, "At Northwich there is a deep and plentiful brine-pit, with stairs about it, by which, when the people have drawn the water in their leathern buckets, they ascend half-naked to these troughs and fill them, from whence it is conveyed to the wich-houses." Hand-pumps were afterwards used, and in a few situations which admitted of the assistance of a stream of water, a water-wheel was employed, then horse-power, and afterwards windmills were introduced; but ultimately steam-power superseded all other methods, as the demand for salt increased.

The process of the manufacture of common table salt from brine is, on the whole, very simple; and though many attempts have been made to introduce more scientific methods, and numerous patents have from time to time been taken out with this aim, the long-established plan of evaporating the water from the brine in large shallow pans by means of heat applied below them is still in vogue; nor does it seem likely that it will be superseded. The brine, on being pumped from the pits, is run into large cisterns, or into reservoirs made sufficiently high for it to flow by gravitation through pipes, as it is required, into the evaporating pans. It is then evaporated upon one general principle. The heat is usually supplied from coal fires underneath, but sometimes the spare heat from a steam-boiler or the discharged steam from an engine is used; and occasionally there are pipes with steam in them amongst the brine in the pans. In this way, according to the degrees of heat, the product is small or large grained salt; the simple rule being, that the greater the heat employed and the less time in the pan, the finer is the salt made, while the less heat and the longer the time in the pan, the coarser the salt. For what is called "lumped" or fine-grained, the brine in the pan is brought to a temperature of 266° F., which is the boiling-point for brine. Crystals soon form on the

surface, and after skimming about a little they sink to the bottom. Each crystal appears granular or a little flaky, and is in the form of a small quadrangular though irregular pyramid. For common salt the temperature is 160° to 170°. The salt thus formed is close in texture, and clustered together in large or smaller pyramids according to the heat applied. For large-grained flaky salt the temperature is 130° to 140°; for large-grained fishing salt, 100° to 110°, the slowness of the evaporation allowing the salt to form in cubic crystals, although it appears that they are not perfect cubes. The finest salts are drawn from the pans twice or three times in the twenty-four hours. If allowed to remain too long the salt crystals would increase in size, and the thick layer of salt on the bottom of the pan would prevent the heat reaching the brine sufficiently to keep it boiling. For "drawing" the salt, it is brought to the side of the pan by a scraper or rake, and then taken out by a long, flat, perforated iron instrument; for it must be remembered that the brine, as fast as it evaporates, is replaced by more, so that the pan is always nearly full, and thus it is necessary to let the brine drain out of the salt. Fine salt, as taken wet from the pans, is generally put into "tubs" or moulds, which are placed at the edge of the pans, their shape being that of the lumps of salt seen in our shop windows. Eight of these tubs of 14 lbs. each make the cwt. It remains in them till the water drains off and it attains consistency enough to be handled, which is the case in about half an hour. It is then turned out and carried into the stove which is at the back of the pan, and is formed by continuing the flues and bricking them over, having the chimney at the far end. The lumps remain until perfectly dried through (known by their giving a clear ringing sound when struck), and then go to a store-room above the stove, which receives heat from it. The lumps are then ready either for sending out as stoved lumps for household and other purposes, or for breaking up and filling into sacks for exportation, especially for America, for which country it is often ground finer in mills before being packed.

The salt-producing area in Worcestershire is very much smaller in extent than that in Cheshire, and the locality of manufacture is confined to Droitwich and Stoke Prior, a rural parish between that town and Bromsgrove. Beds of rock-salt underlie this district; and the brine-springs from which the salt is made are simply springs of water saturated, or very nearly so, with salt from the rock. At Droitwich, which is the original seat of the salt

manufacture, these springs used to rise to the surface, the name of the settlement in Roman times—"Salinæ"—pointing to this fact.

An interesting though somewhat painful fact connected with the salt districts of Cheshire is that of the gradual subsidence of land in many parts. The continual flow of the fresh water over the strata of rock-salt, thereby gradually diminishing the deposits, and the pumping it up in the form of brine, has for ages been gradually thinning the crust of the earth above, and so creating large hollows beneath the surface. This, and the falling in from time to time of the roofs of rock-salt mines, has caused landslips and subsidences of earth, of a more or less serious nature, at different periods in the salt districts, particularly in Cheshire. These subsidences having of late years presented more alarming aspects, the Government thought well to instruct Mr. Joseph Dickinson, Inspector of Mines, to investigate the whole matter. His report was published in 1873, and a most interesting one it is, and well worth perusal even by those who are not personally interested in our salt manufacture. The first landslip in the salt district recorded in history took place in the year 1533, near Combermere Abbey, concerning which it is said in "Leyland's Itinerary" that "part of a hill, with trees upon it, suddenly sank down and was covered with salt water, of which the abbot being informed caused it to be wrought, but the proprietors of the Wiches compounding with him, he left off working." The second landslip was on the 8th of July, 1659, and is recorded in Ormerod's "History of Cheshire" as happening at a place now called Barnelfale, near Bickley. All round Northwich these landslips and subsidences, some dating back to remote times, may be witnessed, the ground in places being torn up into furrows and still visibly on the move, while in one place a depression of about 70 feet has occurred within the memory of man. In the valley between what was once Witton Mill and the River Weaver, where there was a canal, and Witton Brook, a large mere or lake is now being formed, the progress of which can be traced from time to time by referring to maps of the district made at various periods. In this part the water has made its way into different mines, and a great portion of this particular district has become something like a cullender, and baffles the art of man in keeping up the roads and means of communication on the surface. At Winsford, a few miles from Northwich, the development of the phenomena has been sudden and surprising. For about 2½ miles in length by 1 mile in

breadth the surface is visibly sinking. The canal, near the front of the landslip, has already gone down 10 feet. At the Winsford end the subsidence is backing down to the town. The Winsford docks have already gone down about 10 feet, and the bridge over the Weaver has again been raised to give height for the passage of boats. In the intermediate parts in the valley of the Weaver a large mere called the "Flashes" is being formed, whilst on the high ground the land is being torn into furrows and holes. The Ordnance map of 1842 shows the extent then covered with water. The area is now about doubled.

Numerous other landslips and subsidences certainly give the impression that the salt districts are anything but pleasant ones to live in, as the inhabitants can hardly be said to have "fixed residences." The buildings in all towns and villages in the immediate vicinity of salt works suffer more or less from the subsidence of the land; but in no place is this more curiously and painfully illustrated than in Northwich. This little Cheshire town was visited by the writer of the present article a few years ago, when he spent some days in the salt districts. It has a somewhat doleful aspect, almost everything being out of the perpendicular or horizontal, as the case may be. A sober visitor as he walks along the streets might almost fancy he was suffering from some ocular delusion. It would only be to a person in a state of inebriety that the place would look natural. Indeed, the houses and buildings themselves look inebriated, and tumbling about like a set of drunken men. One is leaning forward and threatens to tumble into the street, while another is reeling backwards, and suggests the possibility of its eventually falling into the back garden. Then you may see two houses once divided by a narrow passage, which have subsided sideways towards each other, and both are apparently kept from falling by the mutual support they receive from the meeting of each other's roofs; or two others, which once were in amicable and perpendicular relation to each other, apparently endeavouring in a hostile spirit to make the gap between them as wide as possible. In more than one place a main street has become widened by some feet, the line of houses having gradually and modestly withdrawn themselves some distance from the road and pathway. In one instance of this kind the proprietor of the newly obtained frontage asked the Local Board for the value of the land, which they claimed under the circumstances as town property. The request was refused, but it is a nice point if it ever comes to trial.

Houses are constantly getting into such a state that it is necessary to pull down and rebuild them, after "washers," "shaps," "face-plates," bolts, and other expedients, together with shoring-up, have been resorted to for years. As an instance of the rapidity with which a building will become untenable may be mentioned the Town Hall, which was built not many years ago, but is now abandoned. Again, houses which have been built on rigid wooden frames, and, like Swiss chalets, with much wooden framework in their construction, have frequently to be raised bodily two yards and more by means of jacks. Experience has recently taught the Northwichians that the best plan is to build on wooden sills and with wooden framework. With such constant work of building up and pulling down, repairing and strengthening, Northwich must be a very Elysium of builders. The most notable instance of subsidence is a cottage, which in the memory of many living persons has sunk so deep into the earth that what were once the bedrooms on the first floor are now the sitting-rooms on the ground floor, the wall between them having been knocked through to make a new door. The top of the old door and windows of the ground floor are now just visible above the ground, and probably the old sitting-rooms are now used for cellars. It sometimes happens that the subsidence of the earth takes place very rapidly, and buildings have been engulphed with hardly a minute's notice. A few years ago a steam-engine and eight men were swallowed up, and scarcely a trace of the accident left, with the exception of the depressed earth. A cottage and some women were similarly entombed, and where the building stood there is now a pond, in which at the time of the writer's visit ducks were happily sailing about. Cracks also in the earth and in the walls of buildings will very suddenly present themselves. People in bed often hear the bricks "grumping," and instances have been known of a light being blown out by the wind entering at a sudden crack in the walls. Cracks also will sometimes open in gardens and in the streets of from 12 to 20 feet deep, so that it is actually dangerous to walk in a dark place by night, risking, as one would, a sprained ankle or some worse accident. It is no exaggeration to say that, with the exception of the case of newly-built houses, there is hardly a level floor in the whole of the town. And yet, notwithstanding this highly uncomfortable state of things, the good people of Northwich are something more than moderately happy and contented. Accidents involving a sacrifice

of life so rarely happen, that they do not make themselves miserable on this score. They seem to trouble themselves as little about what is going on below them through the action of the water, as do the dwellers round Vesuvius about subterranean fires, *suppositos cineri doloso*, over which they have their being. Indeed, Northwich, notwithstanding its zig-zag appearance, is a well-to-do little town. A good deal of money is made in it, and apparently a good deal spent in it. Property in land and houses, notwithstanding the tendency of each to disappear, is of considerable value, and is dealt in with as much apparent confidence as if it rested on a solid bed of Kentish chalk, or on the thick granite strata of Dartmoor. It certainly is reassuring to the present inhabitants of Northwich to know that their town existed in some form or other in the time of the Ancient Britons, by whom it was called *Hellath* or *Hellu Du*, the "Black Salt Town"; and that, despite all subsidences, crackings, and changing aspects of nature, it is likely to continue to exist in some form or other for many generations to come, and supply us at home, and a great part of the world besides, with the indispensable article of salt.

The interests of the Salt Trade are carefully watched over by the Salt Chamber of Commerce, to the Secretary of which the writer of this article is indebted for much valuable information. The years 1879–81 will be memorable in the annals of the Salt Trade for the defeat of one of the most determined attempts to tax its industry and to deteriorate the revenue of the River Weaver, under the semblance of a Subsidence Bill, promoted in Parliament by a few landowners and shopkeepers, calling themselves property owners, about Northwich and Winsford, on the plea that the Salt Trade ought to be rendered liable for the damage sustained by sinking of the land in the district, which sinking was satisfactorily proved before a Parliamentary Committee to have its origin in causes for which the trade could not be fairly held responsible. The measure was entitled "A Bill to make Provision of the Assessment, Levy, and Application of Compensation for Damage by Subsidence of Land in the Salt Districts of Cheshire, and for other purposes." The compensation was to consist of a tonnage tax on salt, levied and distributed by an expensive and arbitrary board, on which the taxpayers were to be powerless.

It might also be said that the promoters of the bill scarcely attempted to construct any scientific theory, or to prove the assumptions upon which they based their claim. It was thus reserved

for the opposition to lay a comprehensive scientific view of the case before the committee, based upon careful investigations into the history and geology of the whole of the saliferous strata of Cheshire. The conclusions established by this thorough process of induction were that brine is formed by gravitation of the rainfall through the porous strata of the highlands surrounding the geological basin of Cheshire on to the saliferous beds, that it then rises by hydrostatic pressure to the surface in the lowlands, and that the natural wastage of the strata so occasioned is known to have commenced before any artificial interference of man, and must necessarily continue as long as the natural forces requisite meet with soluble material. Next to the scientific came the industrial view of the case. The fallacies of the promotion were clearly exposed if, indeed, the committee required their exposure. Common sense showed that such taxation could not be otherwise than a hindrance to trade, and very little argument sufficed to show that the interests of the landlord and the enterprising men who developed the profits of the land were one. And facts abounded to prove this, when the large increase in the value of property over the whole district was demonstrated by the rate books and other means, and the damages alleged reduced to mere infinitesimals. The case closed with the legal view, the subtleties of the promotion were well disposed of, and the firmly-established principles of the common law concerning the flow of subterranean liquid applied to the particular case and vindicated. Such, in brief, is the history of this strange attempt of a few busy agitators to enrich themselves further at the expense of a great industry, which had already enriched them. The attempt might have been formidable had it not been met with an energetic determination to show what slight grounds existed for it.

The following tables of the most recently published statistics in reference to the salt trade may prove of interest.

A Table Showing the Number of Pans in Existence, 1st July each Year.

District.	1867.	1868.	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.
Winsford	459	489	503	517	523	541	554	567	595	616	624	612	607	629	638
Northwich	293	316	343	351	355	388	393	400	434	462	478	484	485	453	458
Middlewich	..	..	..	13	13	13	13	11	11	12	12	13	13	13	13
Sandbach	..	..	..	60	60	61	62	67	67	67	67	68	68	69	69
Droitwich District	..	..	..	137	141	145	148	153	154	154	151	151	151	151	151

Annual Statement of the Salt Chamber of Commerce, Northwich. Statement of White and Rock-Salt Shipped from Liverpool, Runcorn, and Weston.

	One year to 31st Dec., 1880.	One year to 31st Dec., 1881.
From Liverpool:—	Tons.	Tons.
To United States	261,687	228,891
,, British North America	109,836	80,784
,, West Indies and South America..	14,064	15,556
,, Africa	35,475	25,181
,, East Indies	309,793	324,109
,, Australia	24,474	23,872
,, Baltic and North Europe ..	100,521	100,957
,, France and Mediterranean ..	2,381	1,187
,, Coastwise	39,087	41,653
,, Holland and Belgium	59,403	67,780
Total from Liverpool ..	956,721	909,970
From Runcorn	152,780	148,122
,, Weston Dock	91,995	85,545
Grand Total	1,201,496	1,143,637

Statement of White and Rock-Salt Shipped from Liverpool, Runcorn, and Weston, during June, 1881 *and* 1882.

	June, 1881.	June, 1882.
From Liverpool:—	Tons.	Tons.
To United States	8,802	10,344
,, British North America	7,464	13,918
,, West Indies and South America	856	1,564
,, Africa	1,573	3,197
,, East Indies	35,684	19,208
,, Australia	3,520	2,215
,, Baltic and North Europe	15,149	20,168
,, France and Mediterranean	.....	254
,, Coastwise	7,317	5,201
,, Holland and Belgium	5,993	5,255
Total tons this month from Liverpool.	86,358	81,324
Previously this year	358,225	359,056
Total tons from Liverpool this year ..	444,583	437,380
From Runcorn:—		
This month	20,735	16,095
Previously this year	49,475	58,337
Total tons from Runcorn this year ..	70,210	74,432
From Weston		
This month	14,922	11,119
Previously this year	41,125	30,493
Total tons from Weston this year ..	56,047	41,612
Total from the Mersey	570,840	553,424

J. J. MANLEY.

INSECTS INJURIOUS TO AGRICULTURE.

Few but specialists have an adequate conception of the loss of national wealth and the destruction of human food caused by the action of the insects that prey upon food crops, forest trees, and fruit. Who shall estimate the money loss caused to Europe by the ravages of the *phylloxera*, which has notably reduced the population of more than one department of France? Official estimates place the loss to French agriculture from injurious insects at the enormous figure of a milliard, or 40,000,000*l.* yearly. The lowest calculation as to the loss caused in England by the turnip-fly in 1881 places it at half-a-million sterling.

Perhaps of all these farmers' foes the best known is the dreaded locust, which not only figured as one of the plagues of Egypt, but has been an object of terror in every quarter of the world. Although we may doubt the literal accuracy of the statement that locusts caused a famine on the coasts of Cyrene by which 800,000 people perished, there is no reason to doubt that Africa has frequently suffered from immense flights of locusts. There were two great invasions of Algiers in 1864 and 1866; in the latter year the damage was so great as to excite the special official observation of Marshal Canrobert. The locusts appeared in April, and in such dense swarms as at some points to obscure the light of the sun. They destroyed all vegetation, and it was with great difficulty that the watercourses were preserved from the taint caused by their putrefying bodies. They are believed to come into the French possessions with hot south wind or the sirocco. A swarm was seen by Steindachner flying at sea about 200 nautical miles from the African coast, and distant from the Canary Islands. The Hottentots use them as food. No part of Africa has escaped the locust, and they are also occasional visitants of Australia and New Zealand. In America the Rocky Mountain locust was for years a word of terror, though its ravages are not now, owing to changes of local circumstances, so extended or so dire as was once the case. The locust was known in Babylon and Nineveh, where it was used as food, and it is distinctly figured on one of the inscribed cylinders. Professor Thomas cites the words of Joel (ii, 20) as an exact and striking description:—"But I will remove far off from you the northern army, and will drive him into a land barren and desolate, with his face toward the east sea and his hinder part toward

the utmost sea." It is perhaps the "buzzing insect" of the Zendavesta. There are many observations of locust swarms in various parts of Asia. The north wind regularly blows clouds of them on the coast of Cyprus. At Naeme, a place east of the Jordan, Burckhardt encountered a swarm so completely covering the ground that his horse killed some at every step. A still more curious evidence of the number and density of these migratory masses is reported. During Lazeroff's expedition against the Turcomans, a detachment of troops near Elizabetopol, in Georgia, met the wing of an army of locusts reputed to be twenty miles in length. The officers, not liking to be defeated by such tiny foes, ordered the men to push on, and very soon they were surrounded, and each man was covered with insects, which crawled into their clothes, filled their guns and knapsacks, and tried to force their way into mouths and ears. At last the men, becoming restive under such unusual conditions, made a regular stampede, and dashed through the fields, slipping about on the crushed and greasy bodies of the insects as if they had been sliding on ice. The march was delayed for forty-eight hours by this insect obstruction, and in the rear of the locust army the soldiers found every blade of grass and green leaf destroyed, and the struggling peasants reduced to beggary. In China the Emperor Wan-li (B.C. 104) was forced to abandon an intended campaign by the severity of a famine caused by the locusts. There are references to the locust in Europe in various classical authors. More than once did the Roman people seek the oracular responses of the Sibylline Books as to the best way of escaping from the dangers that these insects brought. We read of a fierce battle taking place in 558 between two contending locust armies. They visited Italy in 864, France in 870, and Germany in 872. The first invasion of Russia that has been recorded was in 1008, and they have revisited it with unappreciated frequency in every subsequent century. In the fourteenth century they committed great ravages in Servia, Hungary, Poland, Bohemia, Austria, Italy, France, Bavaria, and Saxony. Various flights are mentioned, and Switzerland and England are amongst the countries named as being infected. After fifty years of silence we hear of another great invasion, of which the vanguard reached Poland in 1527. It would be useless to particularise each successive invasion. How great was the inconvenience which they sometimes caused may be judged by this graphic statement of one who endured their persecutions :—

"In June, 1646, having staid two months in a new town called Novogorod, where I was building a citadel, I was astonished to see so vast a multitude, for it was prodigious to behold them, because they were hatched there that spring, and being as yet scarcely able to fly, the ground was all covered and the air so full of them that I could not eat in my chamber without a candle, all the houses being full of them, even to the stables, barns, chambers, garrets, and cellars. I caused cannon powder and sulphur to be burnt to expel them, but all to no purpose; for when the door was opened an infinite number came in and the others went out fluttering about. And it was a troublesome thing when a man went abroad to be hit on the face by those creatures . . . . so that there was no opening one's mouth but some would get in . . . . When we went to cut a piece of meat we cut a locust with it. I have seen them at night when they sit to rest them that the roads were four inches thick of them, one upon another, so that the horses would not trample over them but as they were put on with much lashing, pricking up their ears, snorting, and treading very fearfully. The wheels of our cart and the feet of our horses bruising those creatures, there came from them such a stink as not only offended the nose but the brain. I was not able to endure that stench, but was forced to wash my nose in vinegar, and hold a handkerchief dipped in it continually to my nostrils." The year 1693 was notable as the year of a locust invasion, which gave rise to a considerable literature. The last century saw many swarms. The army of Charles XII was startled by these portentous creatures in Bessarabia, and the years 1747–52 witnessed an invasion which reached from Turkey to Wales. The parts of England that suffered most were Norfolk, Cheshire, Derbyshire, and Staffordshire. It will be found that whilst all parts are more or less subject to locust ravages, for their chief development we must look to the region described by Thomas as a "vast semi-circular sweep around the eastern extremity of the Mediterranean Sea, reaching from Poland around the Caspian and the southern ends of Arabia to Senegal." Their breeding grounds are deserts, treeless areas, or lands of an arid climate. It is difficult to discover any exact periodicity in their visitations, though eleven years seems to be a frequent interval. The great invasions recorded of Central Europe were in 1333, 1650, 1693, 1748, and 1825. The noted locust years in the Western States of America were 1820, 1855, 1866, and 1874–76.

It has been thought by competent observers that even in their native habitat the locusts are essentially migratory, and that the flights do not depend upon numbers, but that the brood of a single female will at the proper age seek out a fresh home. Their movements in the United States have been the subject of very careful examination by the Entomological Commission. In some cases there is a disposition shown to return to their point of departure. In the most famous case—that of the locusts of the plagues of Egypt—the insects came on an east wind, and in attempting to return on a west wind were drowned in the sea. In addition to the great flights, Professor Thomas indicates local flights within the circle of their temporary abiding place. The Rocky Mountain locusts travel, with favourable winds, a distance of a thousand miles. The *Pachytulus migratorius* may reach in a single season from the Crimea to Poland and Germany, and its brood to England in the following season. A day's flight may be estimated at from twenty to one hundred miles. They cross large bodies of water, but whether this is done at a single flight is unknown. It is possible that the survivors may have rested on the bodies of such of their unfortunate comrades as have fallen upon the water. When the wind is high they simply float along with its course, thus attaining the maximum of progress with the minimum expenditure of effort. They drop suddenly and with folded wings, falling upon roofs of houses, the land or sea, and in such numbers that their course upon the water can be traced in a continuous line for leagues. The old idea that they were led by special commanders is now generally given up. "The locusts have no king, yet go they forth all of them by bands" (Prov. xxx, 27). It has been thought that they had a tendency to rush into the sea. This eagerness for a watery grave is purely hypothetical, although it is certain locusts are sometimes driven into water by a strong land breeze, and that impelled by hunger they will endeavour to cross the great bodies of water. On the other hand, it is certain that in the migrations of the *Caloptenus spretus* they have always stopped a few miles short of the Gulf of Mexico.

The locust is a formidable enemy of man, but he has many foes of his own to contend against. Each species has its special dangers. The eggs of Rocky Mountain locusts are greedily devoured by the *larvæ* of several flies. *Systœchas oreas*, *Triodites mus*, chalcid flies, and various others are thus parasitic. The Entomological Commission recommended the following as hope-

ful means of dealing with this evil. "1. The protection and encouragement of the increase of the native locust-feeding birds. 2. The introduction of locust-feeding birds. 3. Inducements to the Indians to collect and destroy the eggs and young. 4. Destroying the eggs or young by making the greatest possible use by artificial means of the natural water-supply. 5. Burning the young in spring. 6. Diverting winged swarms by means of smoke." The increasing settlement of the farming and grazing lands of the Rocky Mountains has greatly diminished the exceptional character of the locust invasions.

After the locust perhaps the most famous of the insects injurious to agriculture is the Colorado beetle, whose exertions caused so much damage in America, and from time to time caused so much anticipatory fear in this country. The *Doryphora decemlineata* was found in the territory of Colorado as long ago as 1824, but then confined its attention to a wild species of solanum (*Solanum rostratum*) growing in the Rocky Mountains. About 1859 the advance of settlers brought the insect into contact with the potato, and it began to show an inconvenient partiality for that plant, which it learned to love, not wisely perhaps, but certainly too well for the farmer's peace of mind. Since then it has marched forward conquering and to conquer. In 1865 it was prophesied that it would eventually reach the Atlantic. Like a sagacious army, it leaves a garrison in each part that it has conquered, and it is the surplus population alone that furnishes the vanguard of fresh victories. In 1871 the Detroit river, separating Michigan from Canada, was swarming with these creatures, and they were seen crossing Lake Erie on ships, pieces of wood, or any other object that offered a corner for their many feet. The instinct of the Colorado beetle does not always serve it well, and in attempting to cross streams and lakes many thousands perish, to the great contentment of the agricultural mind. The loss from the beetle in one year in the State of Missouri alone was estimated by Professor Riley at 100,000*l*. The beetle found many enemies amongst birds. The rose-breasted grosbeak (*Guiraca Ludoviciana*) formerly a rare bird in the Western States, became comparatively common and carried on a destructive warfare. It has also insect enemies, the most terrible being the *Lyadella Doryphoræ*. This parasitic fly lays its eggs on the neck of the beetle in its larval stage, and the maggots thus hatched penetrate to the interior of the larva and kill it by eating the entrails.

It would be beyond the scope of the present brief paper to attempt even a list of all the insects that have been proved by sad experience to be detrimental to agriculture, but following the lead of Miss Ormerod, we may name a few that affect the British farmer. The asparagus suffers from the asparagus beetle (*Crioceris asparagi*) which gnaws the leaves and tender shoots. The bean is affected by the bean aphis (*Aphis rumicis*) which from its enormous power of multiplication soon renders the plant a mass of infection, with the appearance of being covered with soot. The humble bees also damage the bean by piercing holes through the calyx in search of the honey. The *Bruchus granarius* often selects the finest pods of beans and peas as the place of deposit of its eggs. The *Silpha spaca*, not only feeds on carrion, but on the red beet and mangold wurzel. The beet-fly, *Anthomyia betæ*, has in late years caused much trouble in some districts. The *Plusia gamma*, although not very troublesome in England, is said on one occasion to have reduced the average of the Saxon beet crop from ten to three tons per acre. The foes of the cabbage are *Aphis brassicæ*, *Pieris brassicæ*, *Pieris rapæ*, *Pieris napi*, *Anthomyia brassicæ*, *Anthomyia radicum*, *Mamestra brassicæ*, *Tryphœna pronuba*, *Aleyrodes proletella*, and *Ceutorhynchus sulcicollis*. With such numerous and active enemies it is no wonder that the cabbage often suffers. The carrot suffers from *Psila rosæ*, *Depressaria cicutella*, *Depressaria dancella*, and *Depressaria depressella*. The enemy of the celery is *Tephritis ovorpodinis*, which eats away the leaves, whilst the maggot of the *Prophila apii* attacks the inside of the stem and stalks. The injury done to corn is often extensive. The *Aphis granaria* sucks the sap from the leaves and also attacks the ears. A couple of hundred of aphides have been counted at once. Daddy-long-legs (*Tipula oleracea*) is a foe that cannot be despised. The grubs sometimes begin their work of destruction as early as February and continue till June or August, when they change to the pupa state, and do no further damage until the crane-fly emerges. In diminishing the number of the flies, rooks are found to be very serviceable. More than half the crop of barley has at times been destroyed by the *Chlorops tæniopus*. Serious damage is also caused by the *Cecidompia tritici*, or wheat midge. The *Cephus pygmæus* pierces a hole in the stem of the corn and places its egg just below the first knot. *Thrips cerealium* by sucking the juice causes the seed to shrivel. Various wireworms or click beetles by gnawing the roots do immense injury to root,

grain, and fodder crops. Amongst the many insects that feed on the hop plant, the green fly or hop aphis is the most destructive, and in some seasons causes an almost total destruction of the crop. This farmer's foe is the natural prey of those farmers' friends the "ladybirds," or *Coccinellidæ*. The so-called red-spider (*Tetranychius telarius*), which is really one of the spinning mites, also causes great damage. Lettuce is affected by aphides, and by the maggot of the *Anthomyia lactucæ*, which sometimes causes a failure of the seed crop. The maggots of *Anthomyia separum* feed inside the bulb of the onion, which they often destroy. The caterpillars of the pea-moth eat away the insides of the pods. *Sitona lineata* and *Sitona crinata* are beetles that often injure peas, beans, and clover. They sometimes strip the leaves so that nothing is left but the central stalk. The potato suffers from the *Eupteryx solani*, which sucks the sap from the plant and so impoverishes or destroys it. The strange but handsome looking death's-head moth (*Acherontia atropis*) also feeds upon the potato, but is not considered to do any great amount of damage. The aphis known as the turnip green fly does not confine itself to that plant, but is also injurious to the potato. The turnip-fly (*Phyllotreta nemorum*) is very destructive. The same plant is also attacked by dipterous maggots, known, from their method of eating away the leaves in galleries, as "turnip-leaf miners." The caterpillars of the *Athalia spinarum* sometimes appear in great numbers, and their attack is then usually disastrous to the crop. There is also the gall weevil known as *Ceutorhynchus sulcicollis*.

The food-crops have thus to struggle with many enemies, and the same remark applies to the forest and fruit trees. There is, apparently, no vegetable growth that is devoid of animal enemies. No parts of plants are exempt from attack. Root, stem, leaf, fruit, all have their special foes.

The loss thus occasioned every year is enormous, and indeed incalculable. The tendency is probably to the increase rather than to the decrease of such damage. There is at all events an apparent increase. The increase in the devastation caused by insects, so far as it is real, may be due to the artificial conditions of the plant-life affected by their ravages. Farming brings together vast numbers of the same kind of plant, so that if one is attacked by a plague it easily spreads, whereas if the plant stood alone, or was surrounded by others not forming an acceptable meal for the insect, the injury would not spread in the same

manner. This is in itself an unnatural condition, and to this may be added that in modern cultivation the object is sometimes to attain an abnormal development of some special part. This agglomeration of food plants, so that acres will sometimes be covered with the one kind, is apparently an unavoidable incident in the methods required for the provision of food supplies for a large and increasing population, but the additional facility it affords for the destructive energies of the insect world is a point that should not be lost sight of.

How are these ravages to be checked? There are, of course, the purely local remedies to be applied to the affected plants in the shape of washings and dressings. These are for the most part empirical, but the experience of many is gradually growing into a body of doctrine that may be of great use to the perplexed farmer. He has also the birds for allies, though, sometimes with reason and sometimes without, he prays to be delivered from his friends. It is a remarkable and, it may be added, a regrettable fact, that we have not even yet a plain and intelligible description of insectivorous birds, their haunts and habits, and their ordinary and extraordinary food. They are active farmers' friends when his foe is in sight, but some of them are also gramnivorous, and, either for the sake of variety or by the failure of their "natural" food, prey upon the crops. This of course does not diminish the need of encouraging an adequate supply of birds, though it may give pause to any proposal for their indiscriminate encouragement. So useful are the birds that in some instances where, from a mistaken idea of the extent of the damage they had done to the crop, they had been exiled, it has been found necessary to reintroduce them.* One disadvantage, however, is that the birds prey indiscriminately, and so destroy some that are not injurious but beneficial. There are many things grotesque and fantastic in the insect world, and not the least so is the exuberance of parasitic life. The insects that cause such woe to the farmer have often deadly foes, who prey upon them. The "ladybirds," that feed on aphides, and the ichneumon flies, that destroy so many of the cabbage butterflies, are fair types of the insects that are injurious to the insects that are injurious to agriculture. It is clearly not to be desired that insect friend and foe alike should perish by the

* This is the moral of the beautiful poem of Longfellow's "The Birds of Killingworth," in "The Tales of a Wayside Inn." For a further elucidation of this point it may perhaps be allowable to refer the reader to a paper by the present writer in the *Field Naturalist* for November, 1882.

bills of the insectivorous birds. The lapwing has been found very useful in the destruction of the larvæ of the "daddy-long-legs," or *Tipulæ*. Starlings, although active in their destruction of the saw fly larvæ, are sometimes destructive to the grain, but when near the sea-shore appear to prefer the animal life that can be obtained on the beach. The cuckoo, tawny owl, and nightjar may be named.

The gull (*Larus redibundus*), attracted by any unusual profusion of insects, is an active and efficient ally of the farmer. In the Fylde of Lancashire these birds may be seen following the plough, and darting with inconceivable rapidity on the *larvæ* brought to light by the turning of the furrows.

A writer in the "Salt Lake Herald" says that a law was passed there to protect the sea-gulls, but that it was quite unnecessary, as a farmer would as soon think of wantonly killing one of his own chickens as of intentionally harming one of these birds. The law was passed for this reason :—

"In the second year after the pioneers had arrived here—in 1848—the large, black crickets common to these mountainous regions made their appearance in this and some other valleys in clouds—figuratively speaking. They did not fly, but came hopping down the mountain-sides in myriads. So vast were their numbers the mountains were black, and seemed literally alive with the great big, black, ugly things, each one about the size of a large man's thumb. It was at a time when the crops were promising ; everything looked green ; the future outlook seemed bright, and the heart of the sun-burned and toil-worn pioneer grew lighter as the prospect of a plentiful harvest and greater comforts grew more and more tangible with each day's growth of the healthy grain. But blacker than the clouds of coal-black crickets which came hopping down the mountain slopes in countless numbers, leaving barrenness and desolation in their wake, were the clouds of despair which filled the heart of the weary husbandman as this new and unlooked-for curse came slowly but surely towards the pride, the joy, and the promise of the early settler—his fields of waving corn and grain. The foe was utterly unconquerable so far as human efforts were concerned ; there was nothing the heart-sick farmer could do but stand idly by and see the labour of the season destroyed. Children gazed with wonder and terror ; women looked with eyes full of tears, and strong men watched with hearts of despair. It was an awful hour. But lo ! a wonder ! The sky is filled with large

birds; they fly towards the scene of the disaster, and they alight in the fields where the crickets hold supreme sway. Then comes a change. At once the flock of birds begin to eat the crickets. From morning to night they continue, never ceasing. When filled until they can hold no more they vomit up the black mass, and again continue to eat the crickets. This is kept up day after day until not one of the devouring host is seen; the crops are saved, and the birds fly away. This bird was the one which could recently be seen in the fields, and which was then more abundant than at any time since the event above mentioned. It was not surprising that the pioneers should return thanks to God for his succour, and that for ever after the sea-gull should be looked upon as a dear friend, to be protected and encouraged."

It is clear that in his struggle to protect the food of man from his insect competitors, the farmer needs greater knowledge of the habits and life-history of his tiny foes. Systematic instruction in natural history ought to be a part of the education of every farmer's son. Ornithology and entomology would open out to him a new world of interest, and to the purely scientific delight afforded by his abundant facilities for observation would be added the practical advantages to be derived from an intimate knowledge of the ways of living of his insect adversaries. Most of them have a weak point in their armour, and he who knows it is in the best position to apply an effectual remedy.

"Dressings and washings," Miss Ormerod observes, "and other applications require much knowledge in the applicant to make them serviceable, and often only add to the expenses of the attack. For instance, in the case of turnip-fly, or flea-beetle, the dustings which are applied on a dry hot day, or even on a dewless late evening, or early morning, may probably be only a loss of so much money for labour and material per acre, whilst if applied when there was moisture and the leaping legs of the flea-beetle were so clogged therewith that it could not spring away, the dusting would take effect, first by falling on it before it had skipped out of reach, next by sticking to it, to its great injury. Similarly with aphides—many of them have an exterior of a nature that repels all merely fluid washes, and if a mere watery wash runs off from them as from a duck's back, and unless it lodges amongst the crannies formed by their aggregated numbers, or poisons their food, they remain unharmed, whilst if something adhesive, as soft soap, is added, the application remains and has due effect."

The sudden appearance, in immense numbers, of a particular insect points to some unknown element in its history, and has probably a relation to meteorological conditions. The exact relations are still to a large extent unknown, but many suggestive facts have been recorded. Thus, the turnip-fly appears to follow drought, whilst the *larvæ* of *Tipulæ* seem to thrive best in rainy seasons. The eggs of the apple-weevil are inserted into the buds before the petals begin to unfold, and if the genial sunshine causes an early development the mother weevil ceases her task much earlier than when the fructification is delayed by cold or cloudy weather. Thus, the beetles cause great loss to the grower in backward seasons, and unwise methods of cultivation sometimes aggravate the evil. Miss Ormerod has pointed out that the belief that apple trees "bear best on their upper surface," has led to the planting of them so closely that they grow into each other, so that the beholder can look down upon a "sea of blossom." Air and sunshine are, however, thus prevented from access to the lower branches, where the buds, in consequence, come on more slowly and are largely infested by the weevils, scale insect, &c.

The influence of rainfall after drought on the destruction of the caterpillars of some insects has often been observed. Thus, in the case of the *Charæas graminis*, which in 1816 and 1817 devastated the Harz country, rain was found to be an important factor in their destruction, and the same fact was observed when this caterpillar visited Lancashire in 1880.

With the increase of knowledge the farmer will be better able to cope with the minute but destructive agencies, whose multitudinous activity causes so lamentable a destruction to the food of man. The loss to English agriculture from injurious insects is exceedingly great. "Whatever good," says Miss Ormerod, "we may gain from the many different kinds of treatment which may be necessary for forestalling or keeping down insect attack, one point is incontrovertibly of immense importance, and that is by every means, whether by preparation of the ground, draining, manuring, proper thinning of the crops, pruning of the trees, or in whatever way we can manage it, to promote healthy growth. The crop that is run healthily through germination, and makes way rapidly in a kindly soil, is by no means certainly preserved in case of bad attacks, but in case of the moderate amount usually to be expected, the field of plants making (say) their two inches of growth per diem to counter-

balance a loss of (say) one inch by insect-ravage, will hold on, whilst the field of stunted growth that does not replace damage is lost; and whatever may happen in the occasional visitations of destroying legions, or with some pests, whose attacks are especially difficult to meet, it may safely be laid down, that whether in farm or garden, one most serviceable means of prevention of attack is good cultivation."

This is incontrovertibly true, but we must all wish every encouragement to be given to those investigations, and that knowledge and practical entomology will tend to lessen the damage now done. The loss of food, which in money value must yearly be estimated at hundreds of thousands of pounds, and in some years passes even to a higher figure, is a matter of grave importance. Whatever tends to lessen this loss should be commended to the attention and sympathy of all.

WILLIAM E. A. AXON.

NOTE.

The literature of the subject is extensive, and the most important contributions in recent years have come from our cousins across the Atlantic. This may be due in part to the greater proportions of the struggle in which the American farmer has had to contend with the Colorado beetle and the cotton-worm.

At all events the Federal Government and some of the States Governments have from time to time issued reports which are of the highest interest alike to the farmer and the entomologist. Canada has been distinguished in a notable although lesser degree. In England, where money is always more easily to be had for ironclads than for scientific research, the State has done little or nothing. The Select Committees which examined the proposed legislation for the protection of wild birds collected some interesting evidence as to uses of the insectivora. Miss E. A. Ormerod has devoted herself with much enthusiasm and practical good sense to the study of economic entomology, and her lectures, reports, &c., are the most important contributions that England has made of late years to this department of scientific investigation. In any other country she would be a recognised officer of the nation. The following list is not of course exhaustive, but merely suggestive :—E. A. Ormerod : "Manual of Injurious Insects." London, 1881. E. A. Ormerod : "On the Methods of Prevention of Insect Injury." Hertford, 1882. E. A. Ormerod :

"A Lecture on Injurious Insects." London, 1882. Andrew Murray: "Economic Entomology" (South Kensington Handbooks), only the portion relating to Aptera has yet appeared. E. A. Ormerod: Reports of Observations of Injurious Insects, 1879, 1880, 1881. London, 1880, 1881, 1882. Publications of the United States Entomological Commission 1869–82. A. S. Packard: "Insects Injurious to Forest and Shade Trees." Washington, 1881. "Report of the Agricultural Commission of Ontario." Toronto, 1881. 4 vols. H. M. Schmidt-Göbel: "Die Schädlichen und Nützlichen Insecten." Wien, 1881.

ELECTRIC LIGHTING.

ALTHOUGH it is now nearly eighty years since Sir Humphrey Davy discovered the electric lamp, its use remained for a long time confined within very narrow limits, and it is only within the last eight or ten years that this light can be said to have entered the field as a rival to gas for general lighting purposes. One of the great retarding influences in the use of the electric lamp was the difficulty of obtaining a constant supply of electricity. Davy found that if two pointed pieces of graphite or gas-coke, attached to the two terminals of a powerful voltaic battery, be brought for an instant into contact, and then very slightly parted, an extremely rapid succession of electric discharges takes place between the carbons, producing a most vivid light. The light is due partly to the rendering white hot of the air in the path of the discharge, partly to the particles of carbon torn from the poles by the electric current and raised to a white heat, and partly to the combustion of these particles of carbon at an enormously high temperature. This is the principle of the old electric lamp, and of all the so-called "arc" electric lights of the present day. At the time Davy made his discovery, however, the only means of generating an electric current sufficiently strong to produce these effects was the galvanic (or more correctly voltaic) battery. The frictional electrical machines—then the only other means of producing electricity—although giving a spark, do not generate a sufficient quantity of electricity to keep up the very rapid succession of powerful sparks needed to produce the light.

The use of the voltaic battery to produce a continued current is fraught with many difficulties, the principal ones being the need of attention and refilling at not very long intervals (four or five hours), the liability to give off obnoxious and poisonous fumes, and the cost of the chemicals used. These circumstances rendered the general use of electricity as a means of lighting quite out of the question on economical grounds.

In 1831 Faraday discovered that if a closed metallic circuit be approached towards or receded from the pole of a magnet, an electric current is induced in this circuit. This production of induced currents is the foundation of all the magneto-electric machines, now so largely used for generating electricity. The first machine constructed by Pixii, in 1833, was followed by numerous others by Saxton, Clark, Holmes, Van Malderen, Siemens, &c. The next improvement was made by Wilde, who used an electro-magnet* instead of a permanent magnet, and was thus enabled to obtain greater power from his machine. The current for this electro-magnet was generated by a small magneto-electric machine. In 1867, however, Wheatstone and Siemens simultaneously produced machines in which the use of an exciting magneto-electric machine was superseded. They found that when an electro-magnet had been once excited by an electric current it retained enough residual magnetism to induce a current in an armature revolving between its poles. The current thus generated is divided and part caused to pass round the electro-magnet, whilst the remainder is used as a direct current. The part passing round the magnet strengthens the induced magnetism, which in its turn reacts on the armature, producing a stronger electric current. In this way the power of the machine gradually increases till it reaches its maximum, which is a quantity dependent up to a certain point on the rapidity of revolution of the armature. For convenience of distinction, those machines where permanent magnets are used are called *magneto-electric machines*, and those where exclusively electro-magnets, *dynamo-electric machines* (now commonly abbreviated to *dynamo*). In all these machines, both magneto-electric and dynamo-electric, the current is due to magnetic induction, and the energy of the current is

* Davy and Arago had, in 1820, simultaneously but independently discovered the fact that if a conductor through which an electric current is passing be wound round a core of soft iron that iron becomes, during the passage of the current, a powerful magnet, and that in this way much more powerful magnets—called electro-magnets—can be produced than can be obtained in the permanent steel magnet.

derived from the power of the steam-engine or other motive force used for revolving the armatures.

After the introduction of the magneto-electric machines the electric light came much more into use where a very strong light was needed, and was adopted in a good many of our light-houses. The introduction of the dynamo, from which a stronger current can be obtained than from a permanent magnet machine of the same weight, gave an additional impulse to the adoption of this light, and it became more and more used for lighting large spaces. The light from these arc lights, however, is far too powerful for domestic purposes, and the general introduction of electric lighting for such purposes would have been out of the question had not some other form of lamp been forthcoming.

For a long time it has been known that in passing through a wire the electric current meets with more or less resistance, and that the electricity lost owing to this resistance is converted into heat, which causes a heating of the conductor. The resistance differs for different substances, and for the same substance varies inversely as the sectional area of the conductor. If, therefore, an electric current be carried through a conductor showing strong resistance—for instance, a thin platinum or iron wire—heat is generated to such a degree as to raise the conductor to a red or even white heat. The first idea of using this electrically-produced incandescence as a means of lighting appears to be due to Sir William Grove, who, in May, 1845, published in the "Philosophical Magazine" a memoir "On the Application of Voltaic Ignition to Lighting Mines," wherein he says:—"I substituted the voltaic-ignition of a platinum wire for the disruptive discharge. . . . . A coil of platinum wire is attached to two copper wires, the lower parts of which, or those most distant from the platinum, are well varnished: these are fixed erect in a glass of distilled water and another cylindrical glass, closed at the upper end, is inverted over them, so that its open mouth rests on the bottom of the former glass; the projecting ends of the copper wires are connected with a voltaic battery (two or three cells of the nitric acid combination) and the ignited wire now gives a steady light. . . . . Instead of making the wires pass through water they may be fixed to metallic cups well luted to the neck of a glass tube." But this attempt to utilise this light had been forgotten, and it is to Edison in America, and Swan in this country, that we owe the simul-

taneous perfecting and introduction of the incandescent electric light.

We have then, in electric lighting, two totally distinct methods of obtaining light: 1. The "Arc" light, obtained by making a short break in the continuity of the conductor—or "lead" as the conductor is now often called—and forcing the electricity to, as it were, jump this break, and in doing so produce light. The light thus produced possesses great intensity, and one shown at the Crystal Palace was stated to give a light equal to 150,000 sperm candles, although this was probably an exaggeration. 2. The "Incandescent" light, where, at certain points, thin filaments of badly conducting materials are introduced, which offer great resistance to the current and are thus heated to whiteness. There is also a third class of lamp, represented by the "Electric Sun Lamp" or "Lampe Soleil," the Jablakoff and the Wilde candles,* which may be said to partake of both the arc and incandescent systems.

In the arc lights, proper, we have the two ends of the conductor carrying the electric current terminated in two carbon poles, which by means of suitable machinery are allowed to touch for an instant to start the current, and then shifted very slightly apart, when the current continues to pass and produces the intense light now so well known. When looked at through darkened glass, or if its image be projected on a screen, it is seen that the brilliant line of light between the poles is in the form of a crescent or arc, and it is from this fact that this light obtains its name of the "arc" light. The machinery needed to keep the carbon poles at the right distance apart and move them gradually nearer as they are consumed is necessarily somewhat complicated, and it is to obviate this that the Jablakoff and Wilde electric candles, and the "lampe soleil" have been introduced. In these electric candles the two carbons, instead of being opposite one another, are placed side by side about an eighth of an inch apart, and the intervening space filled up with kaolin, or some other badly conducting material. The arc plays across from the point of one carbon to that of the other, but at the same time renders white-hot the kaolin.† This somewhat takes off the blueness—or as one often hears it called the "ghastliness"—

* The Jablakoff and Wilde candles are generally classed amongst the arc lights.

† With these two lamps alternating currents must be used to prevent the two carbons being consumed unevenly, and this use of alternating currents is disadvantageous from an economical point of view.

of the arc light, but it is questionable whether this is not effected at the cost of economical working. In the "lampe soleil" the two carbons, inclined at an angle of about 40 degrees from the vertical, have their ends resting in two cavities, hollowed out in a small rectangular block of marble. The distance between the points is very small, and a small hole is also bored connecting the two cavities in order to facilitate the passage of the electric arc. When the current is started the arc is set up, and that part of the marble or limestone block immediately surrounding is rendered white hot, and this incandescent lime gives a very pleasing and quiet light. This light has still less of the moonlight character than the electric candles, and more nearly approaches ordinary daylight, hence the name "Sun Electric Light" given it by its inventor. Another advantage claimed for this light is that, owing to the incandescence of the lime not ceasing instantly with the current, the slight fluctuations at present unavoidable in generating a strong current do not cause the "blinking" so much objected to in the arc lights. This lamp certainly does seem to possess some advantages over the ordinary arc lights, but here again it remains to be proved how far it can compete with them on economical grounds.

In the earliest incandescent lamps a thin platinum wire was, as we have seen, the bad conductor introduced into the circuit, and thus raised to such a temperature as to become luminous. Other metals were afterwards tried, but in all cases the difficulty was found that if the strength of the current rose only very little above that needed the metal fused, and thus broke the circuit. For this reason a very thin filament of carbon is now used, and is found to answer well. This filament is made by carbonising a very thin shred of bamboo, a cotton fibre, or other suitable substance, and is not thicker than a piece of sewing cotton. If raised to incandescence in the open air, however, this thin filament would be instantly consumed. The carbon fibre bent into the form of a spiral, a horseshoe, or other shape, is inclosed in a small glass chamber, its ends being attached to platinum conducting wires sealed through the glass. The air is exhausted from the chamber before sealing, so that no combustion can take place when the fibre is rendered incandescent by the electric current. The way of connecting the lamp with the conductors varies with the different systems, but in all cases the connection is so made that a broken or damaged lamp can be replaced in a few minutes. These lamps are said to withstand

about 1,000 hours' use, and as their cost is small, need not become a very heavy item in lighting by this system. The light emitted by the incandescent carbon is of a somewhat golden colour, and although not as much resembling daylight as the "lampe soleil," compares most favourably with that given by gas. For external illumination it is probable that the arc system will prove more economical than the incandescent, and that with proper arrangement of the lamps an equable distribution of light can be obtained has been amply demonstrated by the effect produced in that part of the City experimentally lit by Messrs. Siemens Brothers from April, 1881, to March, 1882. The result of the various experiments tried by the Corporation in London seems to prove that, in a satisfactory method of out-door lighting by the electric arc, the lamps should be placed at a much greater height than they usually are, and be fitted with downward reflectors. With lamps erected on supports varying in height from 20 to 60 feet according to the power of the light and the distance of the different lamps from one another,* a very equal distribution of light is obtained, and the very intense shadows thrown by the electric lamp under the ordinary arrangement in a great measure obviated.

In the lighting of large buildings the arc light is also very applicable, although here in many cases the blinking and slight hissing noise usually accompanying it may prove a drawback. And in these cases, and especially in lighting picture galleries, there appears to be good scope for the "lampe soleil." The ordinary arc light, although very much preferable to the yellow light of gas for illuminating pictures, still has a blueness of colour which renders it less pleasant than ordinary daylight. The "lampe soleil," on the other hand, seems peculiarly adapted to bring out the full effects of the pictures.

For ordinary domestic lighting, however, the arc light is undoubtedly out of the question as by far too powerful and dazzling for small spaces. Even the "lampe soleil," which can be made of lower power than the arc light, would probably be too dazzling for anything but the largest drawing-rooms. It is rather to the incandescent electric lamp that we must turn as a substitute for gas for lighting purposes in domestic life. The incandescent light allows of much more subdivision than the arc light, and the

* For the best effect the ratio should be

Height of support : ½ distance between supports :: 1 : $\sqrt{2}$.

single lamps can be made of any power from about 6 or 8 up to 100 or even more candlelight. Those most used up to the present are the 10, 16, and 20 candle lamps. The subdivision of the light is, it is true, carried out at a considerable loss of power. Thus one horse-power, which would be only sufficient for about ten or twelve 16-candle incandescent lamps, would produce one arc light of ten times that power. Still for household use the possibility of having small lights where they are wanted far more than compensates for the loss of power. Another great advantage in the incandescent lamp for domestic use is its much greater safety. The current entering a house lighted by incandescent lamps would in most cases not need to have an electromotive force or tension of more than about 200 volts,* whereas with arc lighting the electric tension in the conductors would be three or four times that, and often even more. Now a current of 200 volts intensity possesses no real danger, as, even if both the bare conducting wires were taken in the hands, the person holding them would not experience more than a sharp shock. With currents of over 300 volts intensity, however, there begins to be great danger unless properly insulated, and already several deaths have occurred from people inadvertently touching or grasping conductors which had not been properly protected.

The advantages of the electric incandescent light over gas are very great, and especially is this the case in the dwelling-house. One jet of gas when burning poisons as much air as several people would vitiate, and besides that emits noxious products of combustion (the worst of which is sulphuric acid, derived from the trace of sulphur always present in gas as an impurity in the form of sulphuretted hydrogen), which are injurious both to persons breathing the air impregnated therewith and also very destructive to pictures and furniture. Again, gas in burning gives off a great deal of heat (nearly 95 per cent. of the energy latent in gas is converted on combustion into heat), so that unless a room be very well ventilated—and a well ventilated room is, alas! a very great rarity—the atmosphere soon becomes overheated and vitiated. This state of things of course reacts on the health of the people breathing this air, producing headache and often more serious and permanent injury. There can be little doubt that the close and vitiated air of the brilliantly lighted and badly ventilated drawing-room plays an important part amongst the causes

* The volt is the unit of electromotive force, or, so to speak, of the "pressure" of an electric current, and is of about the value of an ordinary Daniell's cell.

to which are due the less robust health of the inhabitants of large towns compared to that of those living in the country. On the other hand, the incandescent electric light consumes no oxygen from the air, gives out no deleterious vapours, and only produces about $\frac{1}{150}$ as much heat as a gas-jet of equal illuminating power emits. The adaptability of the electric light to domestic purposes was exceedingly well shown at the Electrical Exhibition in the early part of the passing year (1882). The soft and pleasant light of the suite of rooms fitted up in the Victoria Cross Gallery by the Domestic Electric Lighting Company, the freshness and purity of the atmosphere therein, and the artistic combination of the furniture and lighting, left little to be desired. And it is just in this power of combination and adaptation to surroundings that the incandescent lamp offers such great advantages. Working equally well at all angles, they may be used as bracket, standard, or pendant lamps, and the magnificent flower electrolier made for Edison by Messrs. Verity and Sons, and the scarcely less elaborate ones shown by Swan, the Brush Company (with the Lane-Fox lamp), and others, prove without doubt that this system lends itself pre-eminently to decorative and artistic illuminating. One novelty shown by Mr. Edison was a handsome sconce mirror (also by Messrs. Verity and Sons), in which the lamps lighting it are inside the frame, and out of sight. The inside of the frame is whitened and the light from the concealed lamps reflected out through narrow panes of clouded glass, forming part of the frame of the mirror. Another advantage of the incandescent lamp is its safety. The heat given off is so moderate that the lamp may be hung against the most delicate lace curtain without any fear of fire, and even should the bulb be accidentally broken, the combustion of the carbon fibre the moment the air reaches it is so instantaneous that it has not time to set fire to its surroundings. In fact, the experiment has several times been made of closely wrapping an incandescent lamp in several folds of fine muslin, or other inflammable material, and then breaking the bulb of the lamp with a hammer, but in no case has the muslin ignited.

The Savoy Theatre,—in which the use of gas for lighting purposes is entirely done away with,—is a good example of the lighting of large and public buildings with the incandescent electric light. There, even in summer, one enjoys comparative coolness and purity of atmosphere, whilst in the theatres lighted in the ordinary way by gas the visitor,—especially in the upper part of the house,—has to endure the misery of intense heat, com-

bined with highly vitiated air. An evening visit to the picture galleries of the South Kensington Museum, again, affords a very good means of comparison between electric and gas lighting. There some of the galleries are fitted with the arc electric light whilst in others the old gas lights are retained. Passing from one of the gas-lit rooms to those lit by electricity, almost as great a difference is felt in the atmosphere as upon stepping out from an over crowded and badly ventilated ball-room into the cool evening air of the garden.

It being thus clear that electric lighting is quite applicable both for out- and in-door illumination, the main question now becomes one of cost. Can electric light be supplied at as cheap a rate as gas? Or, if not, will the extra cost be slight and be counterbalanced by the extra advantages offered by electricity? These are questions which have been often asked, but never yet satisfactorily answered, and we fear some little time will elapse before a satisfactory and trustworthy answer is obtained. The estimates freely given have been as various as they have been numerous, and have fluctuated from half the cost of gas to four or five times that cost. As was said by several of the witnesses before the Parliamentary Committee on the "Electric Lighting Bill" of last session, electric lighting has, from a scientific point of view, passed from the experimental to the practical stage, but from the economical side of the question has only just entered on the experimental stage. Just as it would have been impossible to have estimated the present cost of gas-lighting at a time when only one house here and there used it, so it is now next to impossible to estimate with any degree of accuracy the cost of electric lighting when introduced on the large scale from the cost of the small installations which have up to the present been carried out. The very large amounts—varying from 50,000*l.* to as much as 100,000*l.*—paid by most of the electric lighting companies to the various patentees of course militates very strongly against the cheapness of the light for some years to come. But still some good authorities on the subject hold out hopes of electricity being shortly supplied at a moderate cost, and with that hope we must content ourselves for the present and await the result of the large installations which will probably soon be made under the provisions of the "Electric Lighting Bill" just passed. Under that Bill licences and provisional orders may be given to local boards and private companies for the supply of electricity under certain conditions, and on the understanding that the local board

has the right of purchase at the end of twenty-one years or any succeeding period of seven years. Under this clause no goodwill is to be paid for, the plant being taken at the market value for the time being. This compulsory sale, without any compensation whatever, seems rather hard, and will we fear rather stand in the way of the free development of the system and of the outlay of capital on improvements by companies who know that they may soon be called on to part with their rights with no compensation but the bare cost of plant.

The improvements effected recently in accumulators or secondary batteries (first made by Ritter in 1803, Planté in 1860, and improved by Faure, Sellon and Volkmar, and Sutton, &c.) have been a great step in advance towards the perfecting of electric lighting. These batteries bear much the same relation to electric lighting as gasometers do to gas lighting; for, just as, without gasometers, the gas retorts would have to be kept going although only one or two gas-jets were burning, so, without some kind of secondary battery, must the engine be kept at work driving the dynamo. Although at present these batteries are far too heavy for housekeepers to be able to "take in their electricity daily, like milk," as has been suggested, they will undoubtedly prove very valuable in domestic lighting, where they will represent the electrical cistern, so to speak, which will be charged from the central works at convenient times, and from which electricity can be drawn off at will for lighting, motive, or other purposes. And even, under certain circumstances, they may be charged and then carried to their destinations. The London, Brighton, and South Coast Railway now light their Pullman car trains very successfully by the incandescent lamp, the electricity being supplied by Faure secondary batteries.

Besides being useful for lighting purposes, electricity, if laid on, may be used for many other purposes, first and foremost amongst which is as a motive power. With a small and inexpensive machine—not standing more than a few inches in height, and only weighing two or three pounds—the electric current can be turned easily into a motive power for working a sewing machine or such-like light work, or even in many cases may be used in factories and workshops more economically than a steam-engine.

In this article the use of the word current must not be taken as implying that electricity is a fluid, because that is almost certainly not the case. What electricity really is is not known,

and the word current—introduced at the time when electricity was generally taken to be a highly tenuous fluid—is now only retained as being a convenient way of expressing the phenomena of electricity.

In conclusion, we can only hope that within a few years electricity may have superseded gas as a means of light, and that on the other hand gas (somewhat modified in the process of manufacture to suit the change in its use) may have replaced, or partially replaced, coal in our fireplaces. Then we might enjoy fresher and healthier rooms, and, by the diminution of the soot and tarry matter daily poured out of our chimneys into the atmosphere, have sensibly diminished the number and intensity of the fogs from which London suffers so much at present.

L. T. Thorne.

LOCKS AND SAFES.

Mankind began to lock each other out, and in, at a very early period of civilization; notably when the bump of acquisitiveness got the upper hand in the phrenological region, and the force of club law had to be somewhat restrained on account of the personal risk attending the weaker side. Locks are mentioned in the Bible, as will be found on reference to Solomon's song, to Nehemiah, Judges, and other books. The classical writers, too, from Homer downwards, repeatedly use the locks of the period in their works; but, with the exception of what may be termed the classical ages, all those locks were made of wood! The letter or puzzle-locks may be now ignored as they are not locks of the general public. Passing over a great deal of the history of the subject we come to the common lock of every day use, namely, the warded lock. Ward locks, it may be explained, are locks whose security consists of thin strips of metal mostly in curved form brazed edgewise against the back of the lock. The key has slits cut in which these wards fill. The security consists in the fact that these slits shall glide on the wards when the key is inserted. If the slits and the wards are not opposite each other, the key will not go "home," or, in the better class of warded locks, even though the key should pass into the lock, it will meet with other guarding wards that will stop its progress. But with the improvement in the warded

lock arose that well-known instrument the skeleton key. In many cases the slits of keys are made in curious zig-zag fashions; —whilst the wards take the forms of letters of the alphabet, such as L.T.Y. and Z., thus there are *nose*-wards, *top*-wards, *bottom*-wards, *step*-wards, *bridge*-wards, and so on to a great extent. With respect to the amount of security in ward-locks as commonly made, I can assure the reader that, with half-a-dozen skeleton keys, a thief only "half clever" might easily open the front and room doors of a whole town. It is only with ward locks that a skeleton key can be used; and it is done in this wise. What is called a blank key, that is one having no cuts in the web, has the web waxed and when put into the key-hole and turned as far as it will go, it is taken out. It will then be found that the wards of the lock have made their marks upon it, and where those marks are, the fine metal-saw will soon make slits and the "pick" will be formed, the obstructing parts will be cut away, and the skeleton key produced to perfection.

De Réaumur, the well-known French *savan*, said a long time ago:—"There are no machines more common than locks; they are sufficiently complex to merit the name of machine, but I know of no others the structure of which is so little understood by those who use them. It is rare to find any one who knows *wherein the goodness of a lock consists, or the degree of security* that he can attach to it. The *outside* of a lock is usually all that attracts attention." After those opinions, let us consider the modern lock of security, and in what that security consists.

We must come to the year 1778, when the Mr. Barron of that time made a famous name for himself by his invention of the well-known tumbler-lock. Tumblers—which are in principle levers—had long been in use. The security afforded by them was, however, next to nothing. If they were lifted sufficiently high they cleared the bolt altogether, and the lock could be opened. Mr. Barron's improvement completely turned the tables in that way. He made what is called a "gating" in the bolt and put the stump in the tumblers. The consequence of this was that, if the tumbler was not set by the key to the exact position, so that its stump should glide through the slot in the bolt the latter could not possibly pass. Hence "Barron's tumbler-locks" became a shibboleth of lock safety, and continued so for more than one generation.

But another principle of lock safety was on its way to the world; this was the well-known slider lock of Mr. Joseph

Bramah—a lock that was destined to make fame sound her trumpet loudly in its praise. This lock, as our readers are probably aware, consists of a nozzle with a barrel behind it, in which barrel is arranged a certain number of horizontal sliders. There is a central key-pin around which is a spiral spring whose function in connection with a cap is to keep the sliders to the front for the key to act upon. The sliders are thin strips of steel so split as to move with some slight friction in their slots in the barrel, and have, also, notches true and false cut in their acting edges, which notches correspond with the notches in the locking-plate. The false notches, as may be surmised, are intended to mislead the picklock; it may be mentioned that the sliders can be pushed farther back than the true key will push them for the opening of the lock. The key is a pipe one, and has on its working end any number of slits cut in the direction of its length, with a "bit" or tooth on the shank to take into the bolt at the proper time. The slits on the key are cut to irregular depths, so that it will act with greater range upon some sliders than upon others. These sliders may consist of any number, in fact the test lock which hung for so many years in Messrs. Bramah's window contained eighteen of them. In opening the lock the key pushes back the sliders until the notches in them coincide with the locking-plate when the "bit" takes into the bolt and opens the lock In the attempt at picking, if the sliders are either pushed back too far, or not far enough, the bolt will not pass. But every lock that carries a fair face of the kind is not a Bramah lock at all. I have seen them stamped "BRAMAH'S PATENT—SECURE" without a single slider within them! They appeared to be right enough to the eye of the unsophisticated purchaser. He has brought such locks to me, and upon taking them to pieces, the pretended sliders were merely bits of scraps just sufficient to offer some resisting pressure to the key so as to counterfeit that of the genuine article, and there the security began and ended! The imitation Bramah lock has generally only four slits in the key like a +; whilst the real ones have never fewer than five, the average being from five to nine.

The security of the Bramah lock does not consist in any special contrivance beyond its sliders and locking-plate, but solely in the great exactitude with which these parts and the slits in the key are made to act upon each other. The Bramah key is a very neat one, and the slits were cut with an engine of the same

character as those that cut the finer parts of clockwork. Mr. Bramah was the first lock-maker who adopted fine machinery for lock and key-making, the late Mr. Mordan being the next. But the Bramah, with all its elegance, and it is a most elegant lock, has had to give way to the strong, simple lever. I had one fault to find with the Bramah when in its hey-day and high estate upon the jewel caskets of the fair and fashionable of the land; that was, the trouble in pressing back the spring of the sliders. Many a woe-begone knight of the moon when trying his own door, and bubbling over with the post-prandial glee of the "jolly good fellow" has put his Bramah-key into the lock only to have it sprung—shot through his fingers into the street. The lever will not do that; it will "give a man a chance." Every rapscallion lock-picker is not a Hobbs, nor can he make that wonder-instrument with which the great Bramah lock was picked and the two hundred guineas won in 1851. Mr. Hobbs was 20 hours 37 minutes actually engaged upon the lock, but he afterwards picked it three times within the hour in the presence of the arbitrators. This now historical padlock is 4 inches wide, $1\frac{1}{4}$ inch thick, and $2\frac{3}{4}$ inches thick across the key-hole. It was made in 1801.

In order to pick a lever lock certain implements are necessary. These comprise a dummy key with only one bit or step to go into the lock, the opposite end being made square. Upon this square is fixed the eye of a lever, from the end of which lever is hung a string and a weight. These being in place for picking, the weight causes the bit to press against the locked bolt in the direction of opening; a second pipe with another step at the lock end and a handle to move it by, is made to slide gently over that with the lever and string attached to it. The pressure being now fairly on the bolt, the stump of which, as may be understood, is binding the levers at the square part of the "gating" where they rest upon the stump. By gently using the dummy key against a lever it will rise until it will feel quite easy and not slide down again. The cause of this is that it has caught on the upper edge of the stump to the extent of a hair's breadth or so, and stays there. Each lever is so dealt with in succession, and when the last thus rises the weight already spoken of pulls down, and the bolt shoots back on the "open." Many contrivances exist to prevent this picking by pressure. Mr. Hobbs has a "Protector," which is a stump almost of a dog-tooth shape, the

broad end of it moving loosely on a pin at the back of the bolt, and having a small binding spring to keep it in a certain position. When an attempt is made to press the bolt-stump against the gating of the levers, this protector instantly turns on its pin, and defeats that object by holding the bolt and allowing the levers to rise and fall freely to the touch of the pick. It will thus be seen that the levers cannot be held by the stump of the bolt, for the simple reason that that stump is not allowed to touch them. The Messrs. Chubb employ detectors of various kinds according to the nature and quality of the lock. They say :—"In Chubb's Patent Detector Lock any attempt to pick or open it by false keys brings into action the 'Detector.' The accidental trial of a wrong key may produce the same effect. When next the owner tries to open the lock with its own key, he finds it set fast, and cannot unlock until he has 'regulated' it. To do this he must turn his key as if trying *to lock a second time.* This should be done sharply, and will release the Detector, after which the key will unlock in the usual manner."

Mr. JOHN TANN, a maker whose name carries high respectability with it in the trade, tells the public thus :—"The great superiority afforded by the improvements in his PATENT RELIANCE LOCKS, in which protection from picking is obtained by means of the Patent Self-acting Lever, which works in the bolt and is not operated on by the key ; and, in case of an attempt at picking, so relieves the levers of the lock from any pressure that may be applied by the picking instrument as to render it impossible to cause them to indicate the height they require to be lifted in order to open the lock. The Patent Guard, also, which is placed on the front of one of the levers, gives great additional security by protecting the fronts of the levers, either above or below, so that if an instrument even succeeds in lifting the levers, with unprotected fronts, it cannot raise those behind the guard. This improvement also renders it impossible for the keys of any other patent or lever locks to open the PATENT "RELIANCE LOCKS." I have seen the "Reliance" lock, and a new model one that has a powerful bolt-wedging talon against both fraud and force, and I feel bound in justice to say that the mechanism is very neat and, as far as I am able to judge, well adapted for its purpose. Considering by whom they are made I think that I am fairly safe in saying that there need be no fear of breach of confidence by such locks. One word more about "detectors." I have heard it asserted, over and over again,

that they rather lead to the picking of a lock than otherwise and are therefore more harmful than beneficial.

I will just mention here, lest it should be overlooked, that in all suites of locks, "master-keys" and "sub-master-keys" can be included if desired. The contrivances for the security of locks have been almost endless. Some, when tampered with, fired a pistol or rung an alarum! Detectors have been placed at the side, the key having an expanding bit that would only pass the "sentinel"; another, and very excellent way, was a double-claw lever-bolt centred on a pin over the main bolt, and a projection to enable the levers to act upon it. When the bolt was shot, a spring at the back end of the lever pressed the front claw into a notch in the bolt to stay there. Upon the lifting of any of the levers by a pick beyond a certain distance that claw was raised out of the bolt notch, but the slightest overlift more than the true bit of the key would effect, would throw the back claw into the back notch, and as long as the pick held the lever up, so long would that claw hold the bolt fast. When the lever was released, the back spring forced the central lever-bolt front claw again into the front notch as before; and this might go on, see-saw, as long as the picker remained at the work. An additional security to locks is the revolving nozzle. This consists of a circular drum or barrel extending from back to front of the lock; through the centre is the key-hole, and in Hobb's Protector locks a bolt-bit is fixed to the inner end of the barrel. When the key turns in the lock this guard nozzle turns with it and so effectively closes the keyhole that the point of a fine needle even cannot be inserted. In the Protector lock it is the bolt-bit that acts on the bolt, not the key, after the latter has set the levers. In one of Chubb's Bank locks there are several curtains and steel sliders to protect the works from invasion, beside an arrangement of main-bolts and talon-bolts to entirely defeat pickers of every kind. Mr. Tann, too, has a nozzle to his best locks, and the Bank lock has a contrivance in the tail end of the bolt which immediately stops any tampering with it. The "guards" already mentioned are placed on several of the levers to protect them both above and below, and completely shut out the pick as far as the guarded levers are concerned, the bolt in the meantime being held by the detector. This is a self-acting or "dead" lever, that is, takes all pressure off the levers which is produced by a pick, and holds the bolt hard and fast. Mr. Price, the well-known lock-maker of Wolverhampton, and a life-long experimentalist,

says that "In a six-lever lock, constructed with one of the levers 'dead,' it will tease even an expert and practical lock-picker more than all the other five added together." I may say that people with good lever locks for ordinary purposes need have little fear, for he must be a very clever thief indeed who could pick one in the number of hours that he would have at his disposal in any house.

But there is a method of falsifying a true key which the owner may carry in his pocket month after month without knowing it. As this method of turning keys from their allegiance requires neither tools nor skill, and is well known to a certain class of "practitioners," I do not see any benefit to be derived by explaining it here. I can only impress upon every one to keep his keys as much under his own eyes as possible. The old proverb of "a word to the wise" is peculiarly applicable on this point.

Having spoken somewhat at length of lever locks, I will now say a few words about a lock system of a different character altogether, and that is the radial slider. The principle of this lock may be the most familiarly illustrated as follows. A number of sliders and their springs are placed horizontally in a cylindrical barrel, all their points converging to the centre. These sliders work in grooves prepared for them and kept "taut" by helical or screw-shaped springs. There is a circular ring with notches cut in it all round. The key is a solid round spindle having as many grooves scooped on its surface lengthwise of different depths and lengths to correspond with the after position of the sliders; these grooves being deepest at the key point and gradually becoming shallower until they cease at the surface up the shank; there is also a bolt-bit upon this shank. There are some complicated provisions to prevent picking and the use of false keys, but a word-description could not be understood without elaborate wood-cuts, or, indeed, the lock itself. Mr. Cotterill, of Birmingham, the inventor, calls it the "Patent Climax Detector Lock." He claims for it immunity from the violent application of false keys, and from picking, and that on account of the peculiar form of the key it is utterly impossible either to take an impression of it or to copy it.

Before leaving this part of the subject I will say a few words about a "security," the nature of which has puzzled many people. This is the American changeable key lock. Many attempts more or less good have been made in that direction, but the grandest and most enduring is the famous "Parautop-

tic" lock of Messrs. Day and Newell, of New York. The name signifies "concealed from view." This is the lock with which Mr. Hobbs created such a wide-spread interest during the Exhibition of 1851. There are three series of levers in this lock with all their concomitant accessories—and they are neither few nor simple, although strong and durable. These levers all work in harmony with each other as will be now explained. The key is a pipe one, and each bit is one by itself; that is, all the bits can be taken off the shank of the key and arranged in any combination that the owner may choose; a small screw fixes the bits on the shank of the key-stem. The consequence of this power of changing the bits at pleasure is, that the owner may have a new lock every day for hundreds and thousands of days together. Let us suppose that we have a lock with six bits numbered, say, 1, 2, 3, 4, 5, 6. We desire to change them, and we do so, to 6, 5, 4, 3, 2, 1. Now the arrangement, or combination as it is called, that unlocked the lock yesterday will not move it to-day. To morrow we may require 3, 4, 5, 6, 1, 2, or any other that we may please, and we can so change them and use the lock. Another thing. If the duplicate key with the numbers of yesterday were tried upon the lock to open it to-day it would fail, although it was the combination that was in use yesterday. The cause of all this is, that the first series of the lock-levers take and retain the impression given to them by the bits of the key, and transmit that impression to the other two series, which they keep until they are returned to their normal state by the unlocking of the lock, they are then ready for any other combination that may be desired.

Now, taking a six-lever lock, we get 720 changes, a seven-lever 5,040, an eight-lever, 40,320, a nine-lever, 362,880, and a ten lever the enormous number of 3,628,800. That is, that with a ten-lever lock of this kind we can convert it in the way stated to the almost incredible number of three million six hundred and twenty eight thousand eight hundred *different locks!* Here we may pause and take breath for a minute or two. I may just add that changes in the same way may be effected on a number of ordinary lever keys of the same size, so that no two will open the same lock; but in that case every key must have its own lock, whilst here there is but one lock and one key! This seems the very enchanter's art of lock-work. One thing I must not omit, and that is the trumpery and worthless locks that portmanteau and leather case makers will persist upon fixing on

their best productions. You may give any price, from two to five pounds for an article, "making sure," that it has a decent lock upon it; but you will generally find yourself deceived; and that, too, to increase the profit a few shillings. It is a very old complaint, and a very bitter one.

Safes.—What I have to say about safes will not occupy quite so much space as that devoted to locks. The lock question in its way is a large one, and is spread over much more ground, on account of a larger number of people being interested in it; indeed "volumes" might be written upon it.

The "old oak chest" of our ancestors, with its multiple bands, hasps, and locks, is an article with which we are all familiar in story and in song. The family life of Europe could not be told without the famous chest appearing prominently in it, and the curious in such archæology often feast their fancies in the South Kensington Museum. Coalbrook-dale, Wolverhampton, and Birmingham, sent the "old oak" to the lumber-room, or the ancient furniture corner, by making iron chests. Those safes were in reality "strong boxes." But "fire-proofing" did not make its public appearance until 1834. The late Mr. Marr took out a patent for that purpose, beginning with burnt clay and powdered charcoal, and going on to broken up old mortar—not the worst of resistants either. In 1838 he was followed by Mr. Charles Chubb, and in 1840 by Mr. Milner. Mr. Chubb adopted baked wood-ashes, charcoal, broken earthenware, sand, gravel, and such slow-conducting materials as seemed good to him. Mr. Milner look out a third patent, in which an alkaline solution was a prominent ingredient. In 1843 the Messrs. Tann took out their fourth patent, in which a preparation of ground alum and gypsum were foremost, whilst sulphate of potash, muriate of ammonia, potash, nitrate of soda and pearl were also named as ingredients. Then arose the war-cry of the safe patents, running into the law courts, where I certainly do not intend to follow them, the fire-proofing "sheet-anchor" being alum and saw-dust. The safe market of that period was in the hands of Mr. Marr, Mr. Chubb, Mr. Milner, and Mr. Tann, and they certainly did not let it go to sleep. Rivals, however, soon arose, and the trade became pretty general, London being always in the front.

Safes, as we have them at this day, may, for easier comprehension, be divided into two main classes, namely, fire-proof and burglar-proof, both of which I will endeavour to explain.

But before I do so, I must state that a kind of sub-class of safes are made which are not intended to be either one or the other; and also a safe that is to combine within itself both fire-proof and burglar-proof qualities. The sub-class is used in places where neither fire nor house-breaking is likely to happen; and this brings me to an important part of safe history. The battle of the safes against burglars reminds one vividly of that of the guns against armour plates. Case-hardened sides became a necessity, and means to guard the space near the lock and bolt from the action of the terrible drill were also included. Safes began to be made heavier and heavier, and stronger and stronger, with other improvements in keeping.

The next that come in order are the Messrs. Chubb. Their best safe fastens into a solid frame by diagonal bolts, "which frame in its turn overlaps the body-plates, so that if it were possible for a thief to get a wedge past a rebate on the door, the moment the wedge was inserted the bolts would grip the sides and bind them tightly. The edges are joined by angle-irons, rivets, and screws, and are rebated and dovetailed together." They add in their description that there is a newer-planned safe than this, and that is a stronger one at a less cost. The door when shut, being recessed, prevents the insertion of a wedge more than a flush door; should it be inserted, its greatest power is forced to be exerted away *from* the door. The frame is "a special T iron section of enormous strength," almost requiring the power of machinery to bend it. The bolts lock behind the solid iron of the frame, whilst the outer-plate edges show no joint; the plates themselves being "fastened to the frame by a screw that can neither be driven in nor taken out." Even if one of the plates should be taken off, the lining cannot be got out, in consequence of the mode adopted for securing it at the front. There is also a "Patent Steam Tube which adds greatly to the fire proof qualities of the safe at the part most subject to the entrance of heat." I have chiefly used Messrs. Chubb's own language here.

Mr. Tann says that his family have been safe-makers for upwards of 87 years, and that they were the original inventors and patentees of rendering safes fireproof by the use of chemical salts. They claim for their best safe that it is burglar, wedge, drill, and crowbar proof, and fire-resisting. "The steel is first welded to wrought-iron and afterwards hardened in such a manner that *it cannot be drilled nor cut through.* It is

further strengthened by continuous wedge and crowbar resisting angle-bars. The fire-proof composition is not stated, but the locks are said to be "unpickable, gunpowder-proof cylinder locks."

Messrs. Hobbs, Hart, and Co. have also a new system of making safes which I have not been acquainted with before. The bodies of their new safes are made out of one plate of metal which is curved by powerful machinery, the edges being made secure by over-lapping angle-irons. The fire-resisting is stated to be "the result of a careful scientific analysis of all systems previously used," and it has been severely tested before adoption.

A new safe-lock has come to us from America. It consists of a double chronometer movement which can be set to run any number of hours required. When the movement is started it locks the key-hole up, and nothing but violence will liberate the lock. There is also an electric arrangement to keep the train going until the time for which it was set has expired in case it stopped. These locks are necessarily expensive, being about 80*l.* each.

I have now, I believe, given as faithful a sketch of locks, safes, and their makers as far as the limits of my space will permit. There are other names, such as Cotterill, Chatwood, Price, Elwell, and others, which I have been obliged to pass by. They all make good safes, and all have a connection which has just confidence in them.

I must now leave my readers to choose their own safes with this addendum, that if they go to a leading maker, like those who have been named here, they need have no fear of the result.

After the above matter was in type it suddenly came into my mind that I had entirely forgotten a most important item of information; namely, a word about "Secondhand Safes." It can hardly be understood by the public, as it ought to be, that there is a vast system of secondhand "safe" manufacture, and the distribution of such safes is equally extensive. A certain class of secondhand furniture dealers, and the feeders of auction-rooms, are generally the "confidence trick" victimizers of buyers by means of these safes. They also form standing advertisements in the newspapers, both daily and weekly. Like many other things, they have each their cloven foot by which they may be known; it is this. You will read of them or see them in the windowless shops with "Chubb's Locks," "Hobbs's Locks," or

"Tann's Locks." Now, without writing with any dogmatism upon the subject, I may assert with some emphasis that, to the best of my belief, neither Hobbs, nor Chubb, nor Tann sell any locks for safes when they do not make the safes themselves. That they make and sell locks is true, and the "fly-catcher" second-hand safe dealers buy such locks, that is, the commonest kind that those makers sell, put them on safes, and with the decoy-cry mentioned manage to impress the unwary that the said safes have been made by the firms whose names are on the locks! These worthless "patent-secure" boxes are mostly made of very indifferent iron of the burglar-defying strength of one-sixteenth of an inch thick! The door, where the substance can be seen, will be a quarter of an inch in thickness; and they are called "Burglar-proof Safes," forsooth. I do not mean to aver that there are no secondhand safes of a genuine kind to be had. That would be incorrect as well as unjust, for safes, like other articles, change owners at times under the hammer, and are eagerly "snapped up." But there is no such thing as a supply of genuine secondhand safes all the year round, and from year to year; therefore the fine old legal maxim of *Caveat emptor* is especially applicable to second-hand safes. If any reader of this warning, therefore, should disregard it and hereafter find himself his own victim, he need only thank himself for it.

If I might not be considered in any way obtrusive, I would beg to offer a few words of caution in another way. The ladies and their indulgent husbands must, many of them, have had painful experience of dressing-room jewel robberies. There is one peculiar feature in those "transactions," and that is, that they all belong to the same "breed"; in this way:—When the thief makes his descent, the family is always at dinner, or at church—mostly at dinner—the ladder in the garden is always at the exact spot where he wants it, whilst the jewels are either on the dressing-room table, or in an adjacent drawer. They vanish with the unwelcome "conveyancer," and shortly after the dessert there is a general tableau of "fearful" consternation. Whence the thieves "always, always" obtain this precise information I do not care to insinuate.

Now, is it not most extraordinary that such an easily preventible form of robbery should go on season after season? If any lady "hungers" to preserve her jewels from such raids, she has only to call upon any of the firms whose names appear in this paper, and, at a price from 10*l.* upwards, she will be shown

cabinet safes, mounted, painted, or encased in wood to match the furniture of the room, that will most effectively foil the bedroom thief for any reasonable time during which he will be able to use his opportunity. As such robbers mostly enter by the window, an alarm wire could be inexpensively attached that would soon sound "the assembly" in the kitchen and dining-room. And what are 10*l.* or 20*l.* in comparison with hundreds of pounds' worth of cherished jewels. If these last words will "tell" even upon a single reader I shall not have cautioned in vain.

CHARLES STUART MURRAY.

THE NATIONAL PORTRAIT GALLERY.

THE issue of the Twenty-fifth Annual Report of the trustees of the National Portrait Gallery, at South Kensington, calls attention again to an institution which, from various causes, has never received the share of public interest which its contents deserve. Its history, from the actual foundation of the Gallery by Earl Stanhope and the late Prince Consort in 1856, down to the purchases made from the sale of the Hamilton Palace collection in 1882, may be gathered briefly from Parliamentary Reports, and from the elaborate catalogue compiled by Mr. George Scharf, the Keeper and Director of the Gallery.

A passage from the debate in the House of Lords upon "The formation of a Gallery of British Historical Portraits" on the 4th March, 1856, indicates well the principle on which such a gallery should be formed. It is worth recording verbatim, as the management of such an institution (requiring great knowledge and discretion on the part of the trustees) is liable to be misunderstood.

First, as to the *selection of pictures*, the report states that the "Earl Stanhope attached the greatest importance to the *authoritative power of refusal*, and believed that the whole success of the undertaking would depend upon the proper exercise of that power; for if they admitted into a national collection portraits of those who possessed no adequate claim to such honour, the inevitable consequence would be that the Gallery would be deprived of all the distinction which he wished to see attached to it."

"The success of the whole scheme," continued the noble Earl, "depended upon confining the Gallery to men of real distinction, of real fame. There ought not to be in this collection a single portrait as to which a man of good education passing round and seeing the name in the catalogue would be under the necessity of asking 'Who is he?' Such a question ought to be decisive against the admission of a portrait."

The Earl of Ellenborough observed that, "if the management studiously and carefully endeavours to secure the exclusion of all unworthy persons, and of all who, from accident or the exaggerated opinion of contemporaries, may have gained admission to it, it will be an object of emulation to all, and will be, in fact, a gallery of the portraits of those who in all ages have deserved best of their country."

Thus it will be seen that the historic, rather than the artistic, importance of a portrait was considered, and it is well to bear this continually in mind in examining the collection.

In the place of honour in the principal room upstairs is a full-length portrait of H.R.H. Prince Albert, in his uniform as Colonel-in-Chief of the Rifle Brigade. This picture, a replica of the last portrait painted from life, was painted by Winterhalter expressly for the National Portrait Gallery, and was presented by the Queen in April, 1867. Underneath, in a small frame, are two autograph letters, which, in a few words, throw a light upon the early history of this Gallery. The first is from the Earl Stanhope to H.R.H. the Prince Consort, dated Grosvenor Place, February 27, 1856 :—

"Sir,—I presume to send herewith to your Royal Highness the copy of a motion of which I gave notice last night in the House of Lords.

"It would be most especially gratifying to me if your Royal Highness should be inclined to feel any interest in the idea.

"It seems to me that if a space was at once obtained, a yearly grant of 500*l.* in the Estimates would suffice for purchases, and that the selection might be most properly confided to the present Fine Arts Commission, or any new commission over which your Royal Highness might be prevailed on to preside.—I am, &c."

Near the above, in a clear, clerkly hand, is the reply of the Prince Consort, written from Buckingham Palace :—

"My Dear Lord Stanhope,—I have to thank you for your letter, and can only say that your scheme has my entire concur-

rence, and that I shall be ready to give it any assistance that may be thought advisable.—Ever yours truly,

"B. P., $\frac{27}{2}$, 1856. "ALBERT."

The motion brought forward in the House of Lords, says Mr. Scharf, received the cordial support of the Marquess of Lansdowne, the Earl of Ellenborough, the Earl of Carnarvon, and many other peers, and a resolution was passed that an address be presented to Her Majesty the Queen "to take into consideration the expediency of forming a Gallery of Portraits of the most eminent persons in British History." The proposal received the sanction of the Crown, and a grant of 2,000*l.* was voted by Parliament on 6th June, 1856. On the 2nd December of the same year a Board of Trustees was appointed, on whom the responsible task of selection and also of purchase would devolve.

The Board of Trustees in 1856 consisted of—

The Lord President of the Council (for the time being).
The Marquess of Lansdowne.
The Earl Stanhope.
The Earl of Ellesmere.
The Lord Elcho.
The Rt. Hon. Sidney Herbert.
The Rt. Hon. Benjamin Disraeli.
The Lord Robert Cecil.
The Rt. Hon. T. B. Macaulay.
Sir Francis Palgrave.
Sir Charles Eastlake, President of the Royal Academy.
William Smith, Esq.
W. H. Carpenter, Esq.

The trustees in 1882 are—

The Viscount Hardinge (Chairman).
The Lord President of the Council (for the time being).
The Marquess of Bath.
The Earl of Derby.
The Earl Somers.
The Lord Ronald Gower.
The Lord Edmond Fitzmaurice, M.P.
The Lord De L'Isle and Dudley.
The Lord Lamington.
The Rt. Hon. W. E. Gladstone, M.P.
The Rt. Hon. A. B. Beresford Hope, M.P.
Sir Coutts Lindsay, Bart.
Sir Richard Wallace, Bart., K.C.B., M.P.
The President of the Royal Academy of Arts (for the time being).
Evelyn Philip Shirley, Esq.
John Everett Millais, Esq., R.A.

The original selection of trustees, and the list of names on the Board in 1882, may be taken as an indication of the consistent

spirit with which the undertaking has been carried on for twenty-five years. The artistic element is scarcely more prominent on the Board now than in 1856, the importance of the subjects outweighing all other considerations; and we feel, on looking through the list of eminent names, that whilst there is ample technical knowledge to guide us as to the quality and genuineness of a portrait bequeathed or purchased, there is little risk of mistake in the subjects selected.

As soon as the money was voted by Parliament the trustees set to work. Temporary apartments for the reception of the pictures and transaction of business were provided at 29, Great George Street, Westminster, and when the number of pictures amounted to 56 the exhibition was opened to the public on 15th January, 1859.

The first purchase made by the trustees was a portrait of Sir Walter Raleigh in 1857, painted probably by Federigo Zucharo. It is an historical picture of undeniable interest. A half-length standing figure, described in Aubrey's letters, vol. ii, p. 511, as "a good piece (an original) of Sir W., in a white satin doublet all embroidered with rich pearles, and a mighty rich chaine of great pearles about his neck . . . . He had a most remarkable aspect, an exceeding high forehead, long faced, and sour eielidded, a kind of pigge-eie," &c. The picture is painted on a panel, and originally stood in the great parlour at Downton. It is inscribed with the words "Ætatis svæ 34, ano. 1588."

The first donation was the celebrated Chandos Shakspeare; a bust portrait, 22 in. × 18 in., painted on rough canvas. The Chandos portrait was the property of John Taylor the player, by whom, or by Richard Burbage, it is supposed to have been painted. This picture, purchased at the sale of the Stowe collection in 1848 by the Earl of Ellesmere, and presented by him to the Gallery in 1856, is referred to by various writers, and is described in Granger's Biographical History. It has been several times engraved—once for Charles Knight's Portrait Gallery, and, on a larger scale, in mezzotint for the Shakspeare Society, by Samuel Cousins, A.R.A. Whilst in Betterton the actor's possession, this portrait was copied by Sir Godfrey Kneller, as a present to Dryden, who acknowledged the gift in the following lines:—

"Shakspeare, thy gift I place before my sight;
With awe I ask his blessing ere I write;
With reverence look on his majestic face,
Proud to be less but of his godlike race."

The first sculptured portrait was a profile medallion of Henry Kirke White, by Sir Francis Chantrey, R.A. This was the original model for the medallion placed over the young poet's grave in All Saints Church, Cambridge, in 1819, by Dr. Boott, Treasurer and Vice-President of the Linnean Society of London, who presented it to the Gallery in 1860. The first marble bust was that of Thomas Moore, the poet, sculptured by Christopher Moore, R.H.A., in 1842, and purchased by the trustees in 1861, followed by one of the Right Hon. William Pitt, by J. Nollekens, R.A., presented in 1861 by Earl Granville.

The steady increase of the collection, including marble busts and works in terra-cotta, bronze, &c., soon filled the house in Great George Street to overflowing, and pictures had to be hung on screens, on the staircases, and in unfavourable lights.

According to the Parliamentary Reports, the number of visitors to the Gallery during this early period when it was housed in Great George Street, Westminster, was as follows:—

1859	5,305	1865	16,642
1860	6,392	1866	24,666
1861	10,907	1867	24,649
1862 (Exhibition year) ..	17,927	1868	25,344
1863	10,475	1869 (not open at Christmas)	24,757
1864	14,885		

At the close of the year 1869, when the number of portraits amounted to 288, the collection was removed to South Kensington, to the eastern portion of the long building which forms the southern boundary of the Horticultural Gardens, a temporary structure, with an entrance in the Exhibition Road, near the South Kensington Museum. "In this provisional gallery," says Mr. Scharf, with somewhat reproachful emphasis, in his report for 1882, "the collection, pending the construction of a building expressly adapted for the purpose, *still remains*."

On the opening of the Gallery to the public in March, 1870, the attendance of visitors rose to the following figures:—

1870	58,913	1877	79,987
1871	63,195	1878	72,105
1872	67,039	1879 (closed in the Spring for alterations) ..	64,024
1873	60,047	1880	76,109
1874	65,201	1881	84,532
1875	71,740		
1876	108,252*		

* An exhibition of scientific instruments and the Prince of Wales' Indian presents held this year.

In 1875 the National Portrait Gallery incurred a severe loss in the death of the Earl Stanhope, who "had at all times liberally devoted thought and care to secure the prosperity of the Gallery, and had lived to see it firmly established as a popular institution. He was a generous donor, and by his example stimulated the liberality of others." In 1878 the collection had increased to 490 portraits, and the attention of the House of Commons being directed by Mr. Beresford Hope to the insufficient accommodation for the collection, and to the insecurity of the building in which it was placed, more extended space was assigned to the Gallery. In 1877 a valuable series of portraits of judges and eminent legal dignitaries was presented by the Society of Serjeants-at Law, and, in 1879 the collection was further enriched by some highly important historical portraits which had been for many years in the upper galleries of the British Museum. Various alterations in the arrangement of the pictures (which can still only be looked upon as temporary) have been made from time to time as the collection grew to its present dimensions, and at the time of writing (July, 1882) a long gallery is being prepared, with excellent upper light, which will enable the director to carry out his plan of a chronological arrangement of all the portraits. When this is accomplished, the Gallery will be better understood and enjoyed by the majority of visitors. The following is a brief sketch of the contents; the details being taken in most cases from the official catalogue.

In a small square room at the top of the staircase we find a series of portraits illustrating the time of the Plantagenets and the Tudors. In the first period there are few portraits of importance. There is one by an unknown painter, of King Henry IV (1366–1413), in lavender blue dress, bordered with gold, a red headdress, and gold collar, a red rose in his right hand, and holding a golden sceptre surmounted by a *fleur-de-lis* in his left. Near it is a portrait of King Richard III, painted by an unknown artist, rather under life-size, representing the King in dark blue dress, lined with grey fur, with undergarment of striped gold, a black cap surmounting the closely shaven sallow face. This portrait has been repeatedly engraved.* These two we note hanging over the stairs, but our interest is not fairly aroused until we come to the portraits of the Tudor period. There is the small Flemish portrait, purchased by

* Some early portraits, Richard II, Henry V, and Henry VI, will be found at present at the end of the large gallery.

the trustees in 1875, of Henry VII, in rich embroidered robe, wearing the collar of the Golden Fleece, and holding a bunch of red roses in his right hand. This is by an unknown painter, but is technically interesting (note the painting of the gold collar and other details), as well as characteristic and impressive as a likeness. Near it are several portraits of his son, from the small, youthful picture to the splendid life-size Hornebolt, "fierce, coarse, and terrible as some great heathen idol." The early portrait is a small painting on copper, 10½ in. × 7½ in., representing King Henry VIII in lavender grey dress, with gold collar, and black cap ornamented with jewels, turning his small dark grey eyes towards the spectator. This portrait, by an unknown artist, forms a striking contrast to Luke Hornebolt's "bluff King Hal" of later years, a half-length figure, nearly life-size, facing the spectator, the King in dark brown dress striped with gold and silver, with hanging sleeves, richly ornamented, and chain, or collar, of gold. The likeness is undoubted, and the grey eyes recall the earlier portrait; the full front face is as literal in details as a map—no characteristic of the monarch's features has escaped the painter. The face has suffered a little from attempts at cleaning, but the finely painted ornaments and jewels are in good preservation. Other portraits of Henry VIII are here, also Catherine of Arragon and one of Cardinal Wolsey. The next wall is full of interest. There is the delicate boy figure of Edward VI, at the age of six, painted in the style of Holbein; the figure seen to the waist, nearly life-size, standing with head erect, in reddish-brown coat, lined with fur, black cap and feather, the face in profile, very fair, with grey eyes and yellow hair, a single pearl hanging at his breast with a cord of gold, the right hand holding a rose. Near it is Princess Mary, afterwards Queen Mary I, at the age of twenty-eight, daughter of Henry VIII and Catherine of Arragon, "a half-length figure, nearly life-size, wearing a close-fitting dress of gold cloth, patterned with seed pearls. Her hood is of rich crimson and there is much gold upon the dress." This picture, by an unknown artist, is exceptionally rich in colour as well as valuable as a likeness. On the dark blue background, in gold letters, is the curious inscription—

"Anno Dni, 1544, Ladi Mari, Dovghter to the most vertvovs Prince King Henri the Eight.
The Age of XXVIII yeres."

The eyes and the upper part of the face resemble her mother, whose portrait hangs near. This portrait of Catherine of Arragon, in an angular shaped hood, is not to be compared with that of her daughter as a work of art, but it is a suggestive and striking likeness, with the outline of which we are familiar in an illustration to Miss Strickland's "Queens of England."

Next in order are two portraits of Queen Elizabeth, which are studies of costume as well as likenesses of the Queen at different periods of life, the painters having evidently had more facilities for painting the dress than the face of the sitter. A description of one of these elaborate costume portraits is worth quoting in full, if only to give an example of the labour and care which has been bestowed on the official catalogue by Mr. Scharf, the compiler.

QUEEN ELIZABETH, 1533—1603.

Painter unknown.

"*Description.*—The figure, turned to the left, is seen to below the waist. She wears a richly-patterned black dress, with tight sleeves and lace ruffles at wrist. A frill ruff of white lace fits close round the throat and encroaches upon the cheek. The sides of her neck towards the shoulder are covered with a white network embroidered with a black pattern on it. Her dress is ornamented with a latticework of gold cords and pearls, each lozenge containing a golden leaf. An enamelled Phœnix, rising from flames (one of the Queen's known devices) hangs in front from a rich collar composed of jewels and enamelled ornaments, with a remarkably large black stone (qy. diamond) cut into facets in the centre. Her face is turned in three quarters to the left. The very dark brown eyes do not look direct at the spectator, but incline slightly towards the left. Her dark yellow hair is curiously arranged in curves one behind the other, looking like coins. The eyebrows are not marked. Her ear is seen and has no ring in it. An arch of jewels and enamelled ornaments passes over the head. A thin white gauze veil hangs down on each side, and is gathered up into round plaits at the top of the head. Her right hand, without rings on the fingers, holds a red rose with green leaves. The upper part of a fan of ostrich feathers is discernible in the lower corner, but her left hand is not visible. The background is a plain brownish red. The face, which is youthful, has suffered severely from the touch of an ignorant restorer; most of the paint has been removed, but the dress remains uninjured, and affords an interesting study of costume."

This picture, engraved in 1851 by W. Greatbach, 8vo. (Bentley), formerly in the possession of the Rev. R. Newcombe, of Ruthin, Denbighshire, was purchased by the Trustees of the National Portrait Gallery in March, 1865. Painted on panel 2 ft. 2 in. × 1 ft. 7 in.

Near the foregoing are portraits of Mary Queen of Scots. The first is well known, painted when Queen Consort of France, by a French artist; a half-length standing figure, in rich embroidered black-and-white French costume, with jewelled ornaments. She

has a long pale face and *blue* eyes, which "make it doubtful," says Mr. Scharf, "whether the portrait was painted from life, as all authenticated portraits give her brown eyes; but the jewellery and other parts of the dress could only have been painted from reality." This is known as the Fraser Tytler portrait. Another of Mary Queen of Scots by P. Oudry, probably a good likeness, taken later in life, differs considerably from most authenticated portraits.

Thus we see the Royal personages of the Tudor period—a period rich in the history of portraiture—grouped together in one room, and round about them the poets, bishops, courtiers, and ministers of State of the time, forming together a pictorial history of the most valuable and instructive kind. We must not leave this room (which should form the subject of a separate and special visit) without drawing attention to the fine portrait of Sir Thomas Gresham, founder of the Royal Exchange and Gresham College, by Sir Antonio More, which hangs beside those of Mary Queen of Scots; also to the Earl of Leicester by Federigo Zucharo, a late purchase of the Trustees.*

Pending the completion of the new rooms, and the rearrangement of the collection in chronological order, we have now to descend the stairs and continue the examination in a rather scattered manner, taking next the portraits of the Stuart period and the House of Hanover down to the present time; but before leaving the early portraits, let us record the impression that in quality of painting, and in a certain air of distinction peculiar to the portraiture of the time, we shall find nothing to equal what is at present known as the Tudor Room.

On the stairs we pass a portrait of William Laud, Archbishop of Canterbury, a copy of the Van Dyck at Lambeth Palace, of which the Archbishop writes, in 1640:—"In my upper study hung my picture, taken by the life, and coming in I found it fallen down upon the floor, the string being broken. I am almost every day threatened with my ruin in Parliament; God grant that this be no omen." Near the above are two interesting pictures after Van Dyck: one of the Five Children of Charles I, and one of his Consort Henrietta Maria, the originals of which may be seen at Windsor and Warwick Castle. The only portrait of Charles is a bronze bust in armour by Francesco Fanelli.

Below, we are reminded of the period of the Commonwealth

* The Sir Walter Raleigh and the "Chandos Shakspear" are referred to on page 107.

by a most realistic terra-cotta bust of Oliver Cromwell, by E. Pierce, Jun. Amongst the portraits of the Stuart period are two, strikingly alike, of James II (one described on p. 119). There are two of William III, one a quaint costume portrait, painted at the age of seven, by Van Ceulen, and another by John Wyck; two of Mary II, Consort of William III, by Wissing and Netscher; and two of Queen Anne, by Dahl and Closterman.

At this part of the gallery the chronological order is considerably disarranged, but the portraits are full of historic and artistic interest. We can notice only two, those of Lord William Russell, by Riley, and of Lady Russell, widow of the patriot, painted about 1690 by Sir Godfrey Kneller. On the western staircase is the first Duke of Marlborough, by John Wyck, and, in an oval design, Henry Howard, the sixth Duke of Norfolk, by Mrs. Beale. The "Seven Bishops," committed to the Tower in 1688 (in one frame by a painter unknown), recall an episode in the reign of James II. The portrait of Pepys, Secretary to the Admiralty in the time of Charles II and James II, should be examined in connection with some passages in his Diary in April, 1666, where he describes minutely the painting of this portrait, and the taking out of a landscape background of which he did not approve.

Amongst a group of Sir Peter Lely's are the Countess of Shrewsbury, and George Villiers, Duke of Buckingham; also Catherine of Braganza, the Consort of King Charles II, in a curious Portuguese costume, by Stoop. Here also is a small portrait, in crayons, of Samuel Butler, the author of "Hudibras"; Cowley the poet, in loose brown robe and long hair; and Thomas Blood, the "Colonel Blood" celebrated for a daring attempt to steal the regalia from the Tower of London, and for other outrages in the 17th century, of whom Evelyn, in his Diary on 10th May, 1671, writes:—"How he came to be pardoned and received into favour after this I could never come to understand." Here is the Speaker of the "Long Parliament," the Earl of Craven, and James Butler, the first Duke of Ormonde, the victim of a murderous attack by Colonel Blood in 1670. But we must pass on to the large room, at present occupied by a series of historic portraits received in 1879 from the Trustees of the British Museum, also by a valuable collection of portraits of judges and legal dignitaries, presented by the Society of Serjeants-at-Law in 1877.* In

* In connection with these there is a room devoted to engraved portraits of legal celebrities.

this fine well-lighted room, resplendent with the red robes of the judges, chiefly full-length life-size seated figures, from Lord Chief Justice Popham who, when Speaker in the House of Commons (1581), being asked by Queen Elizabeth, "What hath passed in the Lower House?" replied, "If it please your Majesty, seven weeks," down to the portrait of the late Lord Hatherley, by G. Richmond, R.A., bequeathed in 1881. Here are a number of valuable portraits waiting to take their places in order of date in the new galleries. There is George Vertue, the engraver and antiquary, by Richardson; a fine thoughtful head of Newton, by Vanderbank; another of the Duke of Marlborough, by Sir Godfrey Kneller; Locke, Andrew Marvel, and Baxter the divine.

Three remarkable portraits are those of Charles II, the Duke of Monmouth, and Cromwell. Here also is another picture of Queen Elizabeth weighed down by beads and embroideries. By her side is Cranmer in his robes, and near at hand Archbishop Ussher, Sir Julius Cæsar, Lord Bacon, and Lord Burleigh, and a very curious and interesting portrait of Elizabeth Vernon, "the fair Mrs. Vernon," afterwards Countess of Southampton, by Paul van Somer. This picture was transferred from the British Museum in 1879, to which it had been presented as a portrait of Mary Queen of Scots! Three not very important portraits of King Richard II, Henry V, and Henry VI, hang near the above. Crossing the room we come to Sir William Hamilton, Sir Hans Sloane, the Earl of Chesterfield, by Ramsay; Lord Anson (a copy of Sir Joshua Reynolds' picture), Queen Caroline, by Jervas, and the Duke of Cumberland, by Romney. On the east wall is a group of important pictures; there is Pope, seated full length, with his friend Martha Blount in the background, by Jervas, and near it two of King Charles the Second's favourites, by Sir Peter Lely, Mary Davis, the actress, and Elizabeth Hamilton, "La belle Hamilton," the latter seated in a romantic landscape near a waterfall; also a large picture of the Duke of Chandos, in crimson velvet and ermine, dress wig, and bronze boots, painted probably by Michael Dahl.

Returning to the ground floor we find a portrait of King Charles II, painted by Mrs. Beale, and above and around, the statesmen, judges, and court favourites of his time. Here is the famous cruel Judge Jeffreys, by Sir Godfrey Kneller, the Duke of Monmouth, by Wissing, a pupil of Lely, of whom Walpole writes that he "drew all the Royal Family, especially the Duke of Monmouth several times, which ingratiated him with the king

and the ladies." The ladies are here posing in the attitudes made fashionable by Sir Peter Lely and his contemporaries. Catherine of Braganza, by Dirck Stoop, in the Portuguese dress which she wore on her arrival in England in 1662; Madame Middleton, a court beauty, dressed as a shepherdess, by Sir Peter Lely; Louise Renée, Duchess of Portsmouth, by Pierre Mignard; and three more by Sir Peter Lely, the Duchess of Cleveland, Anne Hyde, and "Nell Gwynn" "the orange girl," actress and court favourite, to whom we owe, it is said, the foundation of Chelsea Hospital. There is a fine portrait of Sir William Temple, by Sir Peter Lely, and the grave reproachful face of the First Earl of Shaftesbury, by John Greenhill, "whose able and active politics were conspicuous during Charles II's reign, and who, unable to make any stand against the Court, fled to Holland, and died at Amsterdam."

On the extreme western wall—near some full-length life-size portraits of George II, Queen Caroline, Lord Hervey, Keeper of the Seal, and others of the Hanoverian period—are Prince Charles Ed. Stuart, Prince James, Cardinal York and many small works of considerable artistic interest. Here is the original of the well-known etching of Lord Lovat, by Hogarth, and a small full-length of the painter seated at his work (also etched) by himself; a study of Pope in crayons, an unfinished sketch in oils of Gay, by Sir Godfrey Kneller, a late acquisition. This is a most attractive corner to examine, but we must pass on to some notable portraits, General Wolfe, by Highmore; the Earl of Bath, in robes and wig, by Sir Joshua Reynolds. Underneath this last picture, remarkable for colour and composition, a letter is framed from the Earl of Bath to Mrs. Montagu, dated October 15, 1761, containing the following curious reference to the portrait:—

"I was yesterday with Mr. Reynolds, and have fixed Friday next, at noon, to finish the picture. I have discovered a secret by being much at Mr. Reynolds', that I fancy he is sorry I should know. I find that none of the great painters finish any of their pictures themselves. The same person (but who he is I know not) works for Ramsay, Reynolds, and another called Hudson; my picture will not come from that person until Thursday, and on Friday it will be finished."

The framing of autograph letters near the portraits of their writers adds greatly to the interest; such for instance as the letters of Horace Walpole, Edmund Burke, Isaac Newton, and

David Garrick. "A letter is better than a lock of hair, for historical purposes," says Mr. Scharf, and in some cases of celebrities, a letter is all he has to present to us—waiting for some benevolent donor to bequeath a portrait to the gallery. Near the Earl of Bath are Samuel Richardson, the novelist, by Highmore; the Duke of Cumberland, by Sir Joshua Reynolds; and a curious profile likeness of George II, at the age of 70, "the forehead very receding, the pale grey eyes singularly projecting; the grey, glossy wig in a profusion of curls." On the right is Adrien Carpentier's remarkable portrait of Roubillac the sculptor, painted in 1762; he is represented modelling the statuette of Shakspeare, from which the statue in the British Museum was taken.

In the centre of the next wall is a picture of great interest recently presented by Sir Theodore Martin, "Peg Woffington," the celebrated actress, painted by Arthur Pond, "the most beautiful and least vain woman of her day," lying upon a bed surrounded by crimson curtains; struck with paralysis on May 3, 1757. On the same wall are Handel the composer, and the poets, Dr. Watts, Churchill, Shenstone and Thomson. Next is a group of Sir Joshua's, the very fine portrait of Admiral Keppel, a half-length figure in plain naval uniform, being the most noticeable. There is also one of the painter himself as a young man, and a copy, by a pupil, of the well-known and often engraved portrait of Oliver Goldsmith at Knole and Woburn Abbey. Above is John Opie, R.A., painted by himself in 1785, when a young artist, and near the foregoing, David Garrick, painted at Bath, by Robert Edge Pine. Celebrities follow each other so closely here, that space will permit of little more than mention of their names: Jeremy Bentham (at the age of 13); Angelica Kauffman, R.A., painted by herself; Pitt; Earl of Chatham; young King George III, by Ramsay; and the two young Princes of Wales, George (afterwards King George III), and Edward Augustus, by Richard Wilson, R.A.; Lord Clive, by Dance; John Milton (an engraving); Richard Walpole; and the quaint Quaker figure of Catherine Hyde, Duchess of Queensberry, by Jervas. There are three fine portraits here by Gainsborough, one of Jeffery (Lord Amherst), the conqueror of Canada; there is Whitfield preaching; Franklin; Wright, A.R.A.; and Mortimer, R.A.

Here we leave for awhile the atmosphere of courts and the surroundings of robes, embroideries, crowns, and jewels; there is

a break in the "monotonous procession of kings"; and, in succeeding portraits, the attention is more directed to character than costume. Fashions change, and the general type of features also, as we pass from the period of one popular painter to another. Sir Thomas Lawrence comes upon the scene with his fine portrait of Warren Hastings, exhibited in the Royal Academy in 1811, and his influence is immediately observable in other pictures of the time. We can only mention a few:—Horace Walpole, Sir Francis Burdett, Dr. Paley, James Barry, R.A., Brinsley Sheridan, Curran and Holcroft; Zoffany (painted by himself); John Hunter, Smeaton, John Wesley, Robert Burns, Dr. Priestly, Captains Cook and Vancouver, the discoverers; and General Washington, the first President of the United States.

A scientific, literary, and artistic company ranged together, includes the remarkable portraits of James Watt, the engineer, by C. F. de Breda, and of Samuel Coleridge, by Allston. There is the Rev. John Home by Raeburn; also well-known portraits of Byron, Keats, and Scott; George Morland, painted by himself; Sharp and Bartolozzi, the engravers; William Blake, by Phillips; Stothard, by J. Green; Sir William Herschell, by Abbott; Sir Walter Scott, by Sir Wm. Allan; Sir James Macintosh, by Sir Thomas Lawrence; and an unfinished but very interesting sketch of Wilberforce, also by Lawrence. Other portraits of this period are those of Flaxman by Romney; Benjamin West, by Gilbert Stewart, and Bewick, by Ramsay; two of Lord Nelson and one of Lady Hamilton are on the next wall. Here are Dibdin, by Phillips; Dr. Jenner, Lord Thurlow, Spencer Perceval, Nollekens, Sir Thomas Lawrence (by himself), Jeremy Bentham, and George Stephenson. Other works of interest are, the young Keats, reading, by Joseph Severn, a medallion of Kirke White, Sir David Wilkie (by himself), Hogg, the Ettrick Shepherd, by Denning, a chalk sketch of the Rev. E. Irving, the preacher, Elizabeth Carter, by Sir T. Lawrence, and Sir Walter Scott, by Landseer. Near these are Leigh Hunt, Charles Lamb, Hannah More (at the age of 77), Thomas Campbell, Brunel, Clarkson, Sir F. Chantrey, and the handsome faces of John Kemble and Mrs. Siddons.

At this period the artistic interest becomes weaker, and we may close this brief sketch with the mention of a few well-known names, to indicate the wealth of the collection from an historic point of view, concluding with a more detailed notice of the latest additions to the Gallery from the Hamilton sale.

There is a portrait here of George IV, by Sir Thomas Lawrence, which was the original study for the profile on the coinage ; also Visc. Hardinge, Governor-General of India, by Sir Francis Grant, Sir James Outram, Copley Fielding, Macaulay, Lord Denman, Judge Talfourd, Walter Savage Landor, Lord Campbell, Lord Cranworth, Lord Brougham, Wilson Croker, Father Mathew, Maclise, by Ward, Samuel Rogers, Wordsworth, Sir Charles Napier, Cobden, Faraday, Douglas Jerrold, Charles Dickens, by Ary Scheffer, Haydon, Theodore Hook, Miss Strickland, Grote, Nasmyth, Babbage, Elizabeth Barrett Browning, a small head of Sarah Austin by Lady Arthur Russell, and a miniature of Mary Mitford, authoress of "Our Village," by John Lucas ; sketches of Livingstone by Bonomi, and of Sir Edwin Landseer and Sir Colin Campbell, by Sir Francis Grant. There are also many interesting miniatures, including Pitt, by Gillray, Sir Henry Bishop, Mrs. Fry, and Gillray, by himself ; and there is a collection of autograph letters, for a list of which we must refer the reader to the official catalogue.

Three large portrait pictures of considerable historic interest are—1. Interior of the House of Commons, on the first meeting of the Reformed Parliament, 5th February, 1833, by Sir George Hayter ; 2. "Convention of the Anti-Slavery Society," at Freemasons' Hall, June, 1840, by B. R. Haydon ; 3. "Meeting of the Fine Arts Commission at Gwydyr House, Whitehall, in 1846," under the Presidency of H.R.H. Prince Albert, by John Partridge. Of the twenty-eight members of this Commission, only one survives, the Right Hon. Charles Shaw-Lefevre, now Viscount Eversley.

Amongst the portrait busts of eminent persons scattered through the galleries are Mary Queen of Scots, Cromwell, Hampden, Hogarth, Thomas Moore, Jeffrey, Sir Robert Peel, Charles James Fox, John Wesley, Samuel Lover, Sir Thomas Lawrence, and Benjamin West. There is also a bas-relief of Mrs. Siddons, and a bust of Dr. Johnson, by J. E. Boehm, R.A., based on a mask of the face taken by Dr. Cruickshank, in 1874. Some other portrait busts bring us to a later date than the paintings ; thus we find, in marble or terra-cotta, Richard Cobden, George Stephenson, Charles Knight, Sir John Rennie, Dean Buckland, Dr. Arnold, a study of Thackeray as a boy of 13 or 14, and a terra-cotta sketch of Thomas Carlyle, by J. E. Boehm, R.A., presented by the sculptor in May, 1882.

Besides these, placed near the entrance, are some reproductions

in electrotype of historical figures on tombs (of the size of the original wood or marble), which give to the galleries a curious monumental aspect. Some of the figures are placed in a *standing* position, with folded hands, bearing upon their shoulders the pillows on which they reposed in the original design. The effect is inartistic, not to say grotesque, but in the National Portrait Gallery the faces are of the first interest, and so the once recumbent figures are set up in the best position for examination. These reproductions are from tombs in Westminster Abbey and elsewhere, wherever a valuable portrait can be found.

The two important additions to the Gallery, by purchases from the sale of the Hamilton Palace collection, are at present exhibited separately in an upper room. The first is a full length of James II, a standing figure, by Sir Godfrey Kneller, in a suit of armour, with large blue mantle lined with ermine. "This picture," says Mr. Scharf, "is perhaps the earliest regal portrait of the king."

The second—the last and most important purchase (for which 2,520*l.* was paid)—was "The Ratification of the Treaty for Peace and Commerce between England and Spain," painted about the year 1604, and attributed to Marc Gheerardts, a large portrait picture representing the English, Spanish, and Austrian Commissioners assembled in an apartment in old Somerset House on the 18th August, 1604.

The scene is the interior of a well-lighted chamber, with a large square window with leaden casements looking into a court-yard, through which we see red roofs and chimneys. The walls are covered with tapestries exhibiting tablets dated 1560, apparently an exact representation of the room where the council was held. The floor is strewn with rushes; in the centre is a large square table placed endwise towards the window, covered with a red carpet-pattern cloth, a prominent but rather ungraceful object in the composition. The Commissioners present, according to Stow's Annals, were, for the English—1. Thomas, Earl of Dorset; 2. Charles, Earl of Nottingham; 3. Charles, Earl of Devonshire; 4. Henry, Earl of Northampton; 5. Robert, Lord Viscount Cranbourne, the principal Secretary. The foreign Commissioners were—1. John de Velasco, the Constable of Castile; 2. John Baptista de Tassis, Earl of Villa Mediana; 3. Alexander Rovidius, Professor of Law; 4. Charles, Prince of Aremberg; 5. John Richardot, President of the Privy Council; and, 6, Lodovic Verreiken, Principal Secretary and Audienciary. The English

are seated on the right of the picture; the faces, all but two, are turned towards the spectator. The extraordinary realism of this picture, the evident accuracy of the portraits, study of character and attention to every detail, bring before us vividly the history and manners of the time. In the hall of the Barber Surgeons Company in London there is a fine historical portrait picture representing the members of that Company in the presence of Henry VIII; and in the National Gallery there is the famous Peace of Münster by Terburg, presented by Sir Richard Wallace. Those who are familiar with these pictures, or with some of the large portrait pictures of councils in the town halls of Belgium and the Netherlands, will realise the style and character of this last acquisition to the National Portrait Gallery. "But although," as a contemporary observes, "this cannot be compared for a moment with the consummate art of Terburg, nevertheless it is a good average specimen of the skilled work of the seventeenth century;" and certainly, compared with many historical pictures of our own time, the insistence on accuracy of portraiture by the Belgian painter seems valuable indeed.

In submitting their last report, dated 12th July, 1882, the trustees pay a worthy tribute to the memory of Dr. Stanley, late Dean of Westminster, who had been a member of the board since 1866, and whose "historical knowledge, both ecclesiastical and political, was from time to time of great service to his colleagues, and his authority, often appealed to as to the qualifications of dignitaries of the church for admission to the Gallery, as well as of other eminent men, was felt to be of great weight." The trustees also record the purchase of several pictures and works of sculpture during the past year; also of donations and bequests, concluding in the following words:—"They believe that the interest felt in the Gallery is in no way diminished, and that the advantages which all classes have derived from the study of the national portraits have more than realised the expectations of those who originated the establishment of the Institution." The remark in the report as to "qualification for admission" is worth noting as indicative of the extremely delicate task confided to the trustees, who hold the keys, as it were, of a "temple of fame," to which no one may enter without credentials. We may gather from it that the qualifications for admission are not very clearly defined, and that a dignitary of the church of to-day may be refused admission where a court beauty, or an actress of King Charles II's time, has

found ready admittance. But these matters are in good hands, and the result is an historic gallery containing 600 portraits, in which the history of the nation since the time of the Plantagenets is written in a language more impressive than words—a collection which only requires to be made more widely known to be appreciated as an educational agent of the highest value.

HENRY BLACKBURN.

NOTE.—It may be useful to add that the National Portrait Gallery is open free to the public every day except Friday and Sunday. The entrance is in Exhibition Road, near the South Kensington Museum.

THE BRITISH MUSEUM.

THE common explanation which would be offered of the word museum is that it is a repository for works of art, or for natural and scientific curiosities, but its application to the great pile of buildings in Bloomsbury can be justified in another important particular if we accept the interpretation of Phillips in his "World of Words," ed. 1706, where he describes a museum as "a study or library," and cites "The Museum or Ashmole's Museum" at Oxford as an illustration, for the gigantic book-collection in the British Museum is by no means its least important section. The Museum has in fact, from the date of its foundation to the present time, owed its fame as largely to its library as to the varied and costly contents of its galleries, and it has become, in complete accord with Phillips's definition, the vast "study" of the scholars, authors and literary workers who, under the guise of readers, throng the desks under its dome and spend hour after hour in researches which it would be difficult to make with equal facility elsewhere. It is, moreover, a curious coincidence that the etymology of the word "muse" as given by Professor Skeat in his noble dictionary recently issued by the Clarendon Press, describes with almost humorous exactness not a few of the less learned but not less interested visitors to the scientific collections, when he traces the word to the Italian *muso*, and says, "The image is that of a dog snuffing idly about and *musing* which direction to take,"—a position which on public holidays many of the multitude who find their way to Great Russell Street literally occupy. In any case the term was aptly

bestowed, and the prefix of British to the main title was equally happy, for although the Fourth George presented the trustees with the Royal Library, the nucleus of the rich store was the gift of a private individual, and the national exchequer has been drawn upon from year to year for additions to the collection and for the maintenance of a staff of officials to catalogue its treasures and to open them out to the public view.

In briefly sketching its history, we must go back to a period anterior to the Act of Parliament of 1753, by which the "British Museum," as it was distinctly named in that statute, was founded. A century and a half before that date, Sir Robert Cotton, an associate of the famous Camden, had made a collection of books and MSS., which during his life-time were sequestered, owing to the suspicions of James I, afterwards shown to be groundless, that he had handed to the Spanish Ambassador certain State papers, and that he had assisted in circulating a tract entitled "A Project how a Prince may make himself an absolute Tyrant," which proved to have been written by the Duke of Northumberland, and to have been copied by Cotton's librarian or amanuensis. On Sir Robert's death his son, Sir Thomas Cotton, prayed that the sequestration might be cancelled, and having passed into the hands of his son, Sir John, and narrowly escaped destruction during the Civil War, the collection was taken into the national custody in 1700 by "an Act for the better settling and preserving the Library kept in the House at Westminster called Cotton House, in the name and family of the Cottons for the benefit of the public." This statute enacted that after Sir John's death "the Cottonian Library" was to be vested in trustees and "carefully preserved for the public use without suffering any alienation or embezzlement upon any account whatever." By a subsequent Act the family mansion of the Cottons was purchased for 4,500*l.* for the better arrangement of the library, but for some reason the books were removed in 1712 to Essex House, Essex Street, Strand, where they remained until 1730, when they were again brought to Westminster to a house in Little Dean's Yard, purchased by the Crown of Lord Ashburnham. Here, on the 23rd October, 1731, a fire did much injury to the library, notwithstanding the exertions of Mr. Speaker Onslow and the Trustees to extinguish it, and the rescued books and MSS. were stored in rooms belonging to the Abbey until they were incorporated in the British Museum.

It was, however, to the acquirement of the collection of Sir

Hans Sloane, who left it to the nation on condition that a sum of 20,000*l.* (less, it is said, than the intrinsic value of the coins, medals, and precious stones found in it) should be paid to his family for it, that the foundation of the British Museum, properly so called, was due. Sir Hans, who received his baronetcy from George I, filled the offices of Secretary and President of the Royal Society and President of the Royal College of Physicians, and is also entitled to honourable mention in the annals of British medicine for his introduction of Peruvian bark into this country. The importance and rarity of the baronet's museum were so obvious that it was soon resolved to accept it under the terms laid down in his will, and in 1753 an Act was passed "For the purchase of the museum or collection of Sir Hans Sloane, and of the Harleian collection of manuscripts, and for providing one general repository for the better reception and more convenient use of the said collections, and of the famous Cotton Library, and of the additions made and to be made thereto." Governors and trustees were appointed, consisting of the most eminent persons in the kingdom, among them being the Archbishop of Canterbury, the Lord Chancellor, and the Secretaries of State, who were named as trustees for the public, while Lord Cadogan and Mr. Hans Stanley, who married the daughters of Sir Hans Sloane, were appointed to be the representatives of their father-in-law, and were to be succeeded by two others to be chosen by themselves or by the representatives of the baronet's family. To provide the funds required to purchase and house the collection 100,000*l.* was raised by a lottery, and when at the close of 1767 an account was presented to Parliament the total sum which the trustees had received was 123,900*l.* Of this 20,000*l.* was paid for the Sloane collection, and 10,000*l.* for the famous Harleian MSS., while 10,250*l.* was expended on the purchase of Montagu House, which occupied the site of the present Museum, and a further sum of 14,484*l.* upon repairing and adapting it. The "stock" which the trustees proceeded to arrange numbered, according to a quaint summary in Maitland's "History and Survey of London," published in 1756, no fewer than 69,352 items. In addition to this the Sloane Library numbered 42,000 volumes which—to quote Maitland—"together with his vast Treasure of Rarities, both natural and artificial, are probably the greatest and most valuable collections that are, or perhaps ever were, upon earth, made by a private gentleman." The elementary character of the

catalogue of the "rarities" is interesting as the first attempt to classify the contents of the British Museum, and we give it *verbatim et literatim* :—

Earths, Sands, Salts, &c.	853
Bitumens, Sulphurs, Ambers, Amber Greese, &c.	326
Metals and Mineral Ores, &c.	1,903
Talcs, Mice (Mica?) &c.	245
Crystals, Sparrs, &c.	1,553
Flints, Stones, &c.	917
Precious Stones, Agats, Jaspers, &c.	2,052
Corals, Spunges, &c.	1,175
Vegetables	10,469
Hortus Siccus, or Volumes of Dried Vegetables	296
Insects	4,192
Humana, as Calculi, Anatomical, &c.	672
Testacea, or Shells, &c.	5,402
Echim, or Sea-Urchins, &c.	544
Crustacea, or Crabs, &c.	329
Fishes and their Parts	1,365
Stellæ Marinæ, &c.	161
Birds and their Parts	749
Asteriæ, *Trochi*, *Entrochi*, &c.	217
Eggs of different Species	241
Quadrupedes, &c.	1,591
Miscellaneous Things, natural, &c.	1,698
Vipers, Serpents, &c.	462
Antiquities, *viz.*, Urns, Instruments, &c	669
Seals, &c.	97
Pictures and Drawings	367
Mathematical Instruments	55
Vessels, &c., of Agate, Jaspar, &c.	535
Coins and Medals, Ancient and Modern	25,941
Books of Drawings in Miniature, Illuminated	234
Volumes of Prints	929
MSS., Physick, Natural History, Travels, &c.	3,113
Number Total	69,352

The account given in Maitland is supplemented by a sketch of the Museum, when its arrangement had become an accomplished fact, in the "New and Universal History, Description and Survey of the Cities of London and Westminster," by Walter Harrison, published in 1776. The contents of the institution had then been increased by the addition to the library of the Royal collection of MSS. which had been lying in the old dormitory at Westminster, and which were presented to the Museum by King George II. To the trustees already named were added the then trustees of the Cotton Library, who were to be succeeded by two persons named by representatives of the family, and in the same way the Duke of Portland and

Earl of Oxford, and their successors, to be chosen by themselves or by the Portland family, were made perpetual trustees in recognition of the acquisition of the Harleian collection. All these trustees were then made a body corporate by the name of "Trustees of the British Museum," with power to make statutes, rules, and ordinances, to choose librarians, officers, and servants, and to appoint their several salaries, upon this special trust: "That a free access to the said general repository, and to the collections therein contained, shall be given to all studious and curious persons at such times, and in such manner, and under such regulations for inspecting and consulting of the said collections as by the said trustees, or the major part of them, in any general meeting assembled, shall be limited for that purpose." The building in which the collection was placed owed its title of Montagu House to its erection by John, Duke of Montagu, Keeper of the Wardrobe to Charles II, and afterwards one of the chief favourites with William and Queen Anne. The original arrangement of the contents of the Museum was in three departments: the first, of manuscripts, medals, and coins; the second, of natural and artificial productions; and the third, of printed books. Six officers were appointed to "accommodate the company that go to view this grand repository"—to use the quaint phrase of the day,—and at the head was the principal librarian, whose duty it was to superintend the whole. The regulation then in force as to the admission of visitors stated that: "If any number not exceeding fifteen are inclined to see it, they must send a list of their Christian and surnames, with their places of abode, to the porter's lodge, in order to their being entered in a book; in a few days the respective tickets will be made out, specifying the day and hour when they are to come, which on being sent for will be delivered. The fewer names there are on a list the sooner the company will gain admittance." When the visitors reached the building they were not allowed, as at the present day, to wander at will among the galleries open to the public view, but were conducted through them by the officials. The use of the library was guarded by special restrictions, and it was notified that: "If any person is desirous of studying any of the books on particular subjects or different languages, he may, by applying to the trustees, obtain an order to attend the Reading Room for a time, where a proper officer is appointed to furnish him with such books as his curiosity may prompt him to inspect." Such were the rules in force, and such were the contents and

arrangements of the Museum when it was opened on the 15th of January, 1759.

From that day to the present the various departments have received costly and curious additions both from Royal and private donors and by purchase at the national expense. The library of the Third George, given by his successor, is estimated to have cost 200,000*l.*, and during his lifetime His Majesty presented the famous collection of Egyptian monuments acquired by the capitulation of Alexandria in 1801. For this rare acquisition, and for the Townley collection of Greek and Roman statues and other sculptured marbles, purchased, in 1805, by the authority of Parliament, for 20,000*l.*, it was necessary to erect new buildings, which took the form of a vast quadrangle, enclosing an inner court—the space now occupied by the Reading Room. In 1814 a further section of the Townley collection, consisting of bronzes, coins, gems, and drawings, was bought for 8,200*l.* In 1816 the Elgin marbles were bought for 35,000*l.*, and the Phigaleian marbles, excavated by Mr. Cockerell, in 1815-16, for 19,000*l.* Among the most important additions since that date, may be mentioned the splendid Greville collection of minerals, bought for 13,727*l.*; Colonel Montagu's complete zoological collection, formed in Devonshire; the antiquities bequeathed by Mr. R. Payne Knight in 1824; the botanical collection bequeathed by Sir Joseph Banks; the antiquities from Nineveh, collected by Sir H. Layard, between 1847 and 1850; the Italian antiquities of the late Sir William Temple, British Minister at Naples, purchased by a parliamentary grant for 8,400*l.*; and the sculptures from Halicarnassus, obtained by Mr. C. T. Newton.

The gradual enlargement of the Museum involved such extensive alterations that by the year 1845 Montagu House had disappeared from the scene, and the designs of Sir Robert Smirke had been gradually carried out. In 1857 the new Reading Room was built by Mr. Sidney Smirke from the designs of Sir Antonio Panizzi, and the structure as it now stands was virtually completed. The recent removal of the specimens of geology, mineralogy, and botany to the fine building erected as a Natural History Museum at South Kensington—"a deplored necessity," as Mr. Edward A. Bond, the Principal Librarian, terms it, in his introduction to the latest edition of the "Guide to the Museum"—has made space available for the display of the specimens in the other departments, and the first stone of another addition to the structure has just been laid.

The Library and Reading Room form in many respects the most important, and, from a purely utilitarian standpoint, by far the most reproductive department of the great national collection. The library, which includes the Sloane collection, the Cotton MSS., the Royal library presented by George II, the King's library of George III, the Greville library, and the musical libraries of Burney and Hawkins, stands second only to the Imperial library of France in the number of its books, which is returned at about 1,300,000, and is increased every year by many thousands of volumes. The arrangement of the books is so admirably made that it shows the gradual progress of the printer's art, commencing with the so-called block-books, printed from the wooden blocks which ultimately gave way to the moveable metal type used in the reputed "first printed book," the Great Bible printed at Mentz, by Gutenburg and Faust, in or about 1455. The work of the earliest presses in Germany, Holland, Italy, France, and England, is amply illustrated in the "curiosities" of the library which are wisely set out for view in cases in the rooms devoted to the Greville and the King's Libraries. Another section of great interest is that devoted to London topography, chiefly consisting of the collection of the late Mr. Frederick Crace, recently purchased by the trustees. This unrivalled collection includes a perfect series of maps of the great city from 1560 to the present time, and a set of views of London of equal interest. The manuscript department contains 50,000 volumes, of which 8,500 are in Oriental languages; more than 46,000 charters and rolls; nearly 7,000 detached seals and casts, and upwards of 100 ancient Greek, Coptic, and Latin papyri. The chief places in the frames in the rooms containing these treasures are assigned to some of the most famous English and foreign charters; royal copy-books, prayer books and wills; and autograph letters of eminent men, past and present, from the sixteenth to the nineteenth century. The list of bequests shows that the nation is still ready to contribute to the collection, and since King George IV set the example in 1823, by presenting the library formed by his predecessor, not a single year has passed without some gift of more or less importance. Another and permanent source of increase to the library is provided under the terms of the Copyright Act (5 and 6 Victoriæ, cap. 45), which confirms the privilege enjoyed by the trustees since 1814, of receiving a copy of every book published in the United Kingdom.

The noble Reading Room occupying the area of the great quadrangle is one of the sights of London, and its dome, 140 feet in diameter and 106 feet in height, is in diameter second only to the Pantheon at Rome, which exceeds it by two feet. St. Peter's at Rome is 139; St. Maria, at Florence, 139; the tomb of Mahomet, Bejapore, 135; St. Paul's Cathedral, 112; St. Sophia, Constantinople, 107, and the Church at Darmstadt, 105. It is constructed mainly of iron, and 2,000 tons of the metal were used in its erection. It contains ample accommodation for 300 readers, giving each a separate table 4 feet 3 inches long. Each reader is screened from his opposite neighbour, and the arrangements are so convenient that while he is provided with a fixed inkstand and suitable penholders, the whole table-top is free from writing implements or other *impedimenta*, and even a supply of air is provided in the framework of each table, while at the foot is a tubular rail through which a current of warm water can be passed at pleasure. The room contains 3 miles lineal of book cases, all 8 feet high, forming, if we assume the books to be the average octavo size, a range of 25 miles of shelves. It has also been reckoned that if we suppose the shelves to be filled with books of paper of average thickness, the leaves placed edge to edge would extend about 25,000 miles, or more than three times the diameter of the globe. The cost of the room was 150,000*l*., including the fittings and furniture.

One great problem which is inseparable from the formation of all gigantic libraries is that of the catalogue, if only because of the difficulty of arriving at the best method of classifying the works, and of avoiding the temptation to put a book under "Miscellaneous," a mode of procedure which a Quarterly Reviewer once described as being just as scientific as would be that of a botanist who, doubtful of the class of a particular plant, should put it among "Weeds." And even when this difficulty has been surmounted, there arises in the case of such a library as that of the British Museum, the further question of whether the catalogue, if made, can be printed within such a period as would give it any practical value, bearing in mind the inevitable tendency of such libraries to increase and multiply. At the British Museum, after long discussion, the work of printing has been commenced at the suggestion of the trustees, and under the direction of Mr. Bond, the Principal Librarian, one unanswerable reason in favour of printing being, as Mr. Garnett said, at the annual meeting of the Library Association of the

United Kingdom recently held at Cambridge, that without the compression permitted by print, it would soon be impossible to accommodate the catalogue in the Reading Room. Mainly on this account printing has been adopted, and from three to four volumes of MSS. are now compressed into a single volume of print, with so much space left for additions, that whereas the Reading Room has hitherto been severely taxed to provide room for the catalogue of a million volumes, Mr. Garnett calculates that if printing is continued there will be space for the catalogue of a library of eighteen million volumes. Unfortunately there is in the case of a national library the obstacle of lack of funds to carry on the work with sufficient speed, and it appears that, at the present rate of progress, only fifty manuscript volumes can be put into print in a year, and forty years will therefore be occupied in completing the undertaking. If, on the other hand, the Treasury will open its purse-strings, it may be possible to complete the printing by the year 1900, and thus enable the twentieth century to start, as Mr. Garnett desires, with a complete register of the valuable literature accumulated at the Museum, representing all the previous centuries of manuscript and typographic literature.

The number of visitors to the Museum depends very largely, it is needless to say, upon the presence or absence of any other special attraction likely to bring foreigners or country people to London. When the metropolis has a "great exhibition" to offer in addition to its ordinary "sights" the Museum is thronged by strangers, and in 1851, for instance, when the world's show in Hyde Park brought visitors from every part of the world, the tale of the turnstile in Bloomsbury showed a total of 2,527,216 admissions, and in 1862–63, the year of the second exhibition, it was 1,024,030. The average number when there is no special attraction elsewhere ranges between 500,000 and 600,000. This, when compared with the register of visitors to the National Gallery or the South Kensington Museum, seems to show that the feeling of Mr. William Hutton, author of the "Journey from Birmingham to London," who described his inspection of the Museum as "the only sight that disgusted him," owing to the tantalising multiplicity of its riches, is still shared by a large number of persons who forget that a visit to the Museum is no longer a matter of police, and that instead of being hurried through its galleries in thirty minutes as Hutton was on the "hear, see, and say nothing" principle, they may walk at leisure

from room to room with one of Mr. Bond's admirable handbooks to assist them. The average number of visitors to the National Gallery is nearly half as large again as the number recorded at the Museum, while the visitors to South Kensington are about two to one when compared with the pilgrims to Bloomsbury.

The cost of maintaining the Museum is divided in the Treasury accounts under the three heads of establishment, building, and purchases. The establishment expenses amount to upwards of 60,000*l.* a year, the repairs and other necessary work in the buildings cost an average of about 14,000*l.* a year, and the purchases, unless in exceptional cases when Parliament sanctions some extraordinary outlay, seldom exceed 25,000*l.* The salaries of the officials are not only far removed from the extravagant, but, when their special qualifications are remembered, they are, as compared with the non-scientific branches of the Civil Service, decidedly underpaid. Some improvement in the scale has, we believe, been recently made, thanks in great measure to the steady advocacy of the justice of such a proceeding by the editor of the *Athenæum*, but more might still be done with a due regard for the interests of the nation. In the opening of the Museum to the public all needless restrictions have gradually been removed, and it is open daily throughout the year, Sundays only excepted, at ten. A great concession has been made in the hours during which it remains open, the full advantage of probable daylight being given by extending the hours to five in March and April, six from May to August, while on Monday and Saturday from May to the middle of July it remains open until seven, and from the middle of July to the end of August until eight. The agitation for the opening of the Reading Room during the evening by using the electric light has so far been met by a *non possumus* on the part of the trustees, but the grounds of their refusal to grant the boon are simply practical and technical, and when they see that no injury is likely to result to the property of which they are the custodians, they will probably give their consent. It may indeed be said that, as far as is consistent with the safety of the treasures placed under their care, the trustees have done all that lies in their power to make them accessible, and it may be hoped that they will be rewarded by a largely increased use of the building by all classes.

CHARLES MACKESON.

SOCIAL AND INDUSTRIAL PROGRESS IN AUSTRALIA.

NOTWITHSTANDING all that has been said and written respecting the character and resources of Australia, there are myriads of English-speaking people to whom the name of the great island continent remains a mere geographical expression, and who have yet to become acquainted with the fact that it signifies another and larger Britain, in which is to be found abundance of elbow-room for capitalist and labourer alike. It has been truthfully observed that first impressions are generally the most difficult to eradicate, and such appears to be the case in many parts of the United Kingdom, where the popular idea of life and society at the Antipodes has become based upon a state of affairs long since extinct. In New South Wales and Tasmania there are few, if any, traces of the convict element which writers of sensational fiction are so fond of introducing into their works, thereby directly assisting in perpetuating groundless prejudices of the most mischievous description. The baneful results of the sad mistake which led to the transformation of the beautiful country added by Captain Cook to the British dominions into a social pandemonium, have become slowly but effectually effaced, and an Englishman landing at Sydney for the first time instinctively experiences considerable difficulty in realising the fact of his being distant some 16,000 miles from the shores of his native land, and that the "vast waters of the blue Pacific" intervene between the rocky entrance to Port Jackson and the wave-washed cliffs of the mother country. Everything appears so thoroughly English. Standing in the principal street of Sydney, the English visitor might easily imagine himself in Leicester, Nottingham, or some semi-manufacturing, semi-commercial town at home. There are large well built edifices, principally of sandstone, devoted to banking, trading, and similar purposes; the shop-windows are filled with drapery and other articles from English establishments, and arranged in English fashion; cabs and omnibuses continually ply in the streets; while the appearance of the outdoor population unmistakably reveals its English origin, save that the rags and squalor and miserable expression of feature so common in the "old country" are conspicuous by their absence. But it was not always thus. A few years ago Sydney was a very different place to what it now is. When the principal thoroughfares of the commercial metropolis of the

southern hemisphere—for as such the capital of New South Wales must be regarded—were lined with shanties, rude weather-board buildings, with here and there an edifice of somewhat more pretentious character; when bullock teams formed the principal means of goods conveyance to and from the country districts; when aborigines were as plentiful in the suburbs as are dog-roses during summer in an English country lane; and when the smoky funnel of an ocean steamer was yet an unwitnessed spectacle in Sydney harbour, the "new chum" found himself in the midst of strangely characteristic surroundings. All this has become changed. The same spirit of progress which has made London a city of palaces, and supplied the inhabitants of the most remote country towns with conveniences and luxuries formerly undreamed of, has been actively at work in Australia, producing results of a most important and encouraging nature.

Properly to comprehend the true character of Australian social and industrial progress, it should be premised that the total area of the various colonies, including Tasmania and New Zealand, is 3,075,736 square miles; the population of the same being 2,715,792, or less than one soul per square mile. The area of continental Europe is 3,800,000 square miles, with a population of 500,000,000, or over 131 souls to each square mile. The Australian colonies proper are New South Wales, Victoria, South Australia, Queensland, and West Australia. When including also Tasmania, formerly known as Van Dieman's Land, and New Zealand, the whole group is termed Australasia. The area of the various colonies, according to the "Victorian Year-Book for 1880-81," by Mr. H. H. Hayter, Government Statist of Victoria, is as follows:—New South Wales, 309,175 square miles; Victoria, 87,884 square miles; South Australia (including the Northern Territory) 903,425 square miles; Queensland, 667,615 square miles; Western Australia, 975,930 square miles; Tasmania, 26,375 square miles; New Zealand, 105,342 square miles. The official returns of each of the colonies other than Victoria differ slightly from the above, but it may be regarded as approximately correct. The various populations, according to Mr. Hayter, formed, in 1879, an aggregate total of 2,715,792, divided as follows:—New South Wales, 703,143; Victoria, 840,620; South Australia, 259,460; Queensland, 217,851; Western Australia, 28,668; Tasmania, 112,469; New Zealand, 463,729. The results of the census of 1881 showed a marked increase of population in the different colonies; the number in

New South Wales having risen from 703,143 in 1879 to 751,468 in 1881. The population is found to be most dense in Victoria. This is accounted for in some measure by the systematic development of mining and manufacturing industry in that colony, which, until recently, was regarded as the most energetic and enterprising of the whole group, a distinction which, since the holding of the Sydney International Exhibition, has become largely shared by New South Wales. The principles of responsible government prevail in all the colonies, with the exception of Western Australia, which is at present in a kind of semi-independent condition, each colony having the absolute control of its own affairs, subject to the formal sanction of the Governor, as representative of the English Crown. Practically, the whole of Australia is self-governed, the various legislative councils and assemblies representing all classes of the population, tradesmen as well as professional men being found acting as parliamentary legislators. The introduction of responsible government into Australia dates from 1856, an Act conferring a constitution on the people of New South Wales having received the Royal assent in the previous year. In 1858 the colony adopted manhood suffrage. "During the last quarter of a century," says Mr. T. Richards in "New South Wales in 1881," "the people of New South Wales have had a form of government uniting with the vital principles of the British system the free play of democratic power. The efficacy of the three elements corresponds with their usefulness, for the Queen's Representative is the first in dignity, the Legislative Council is the first in stability, and the Legislative Assembly is the first in power. Members of the Legislative Council hold their seats for life; members of the Legislative Assembly are elected under a Triennial Act. Both Houses closely follow, in all possible respects, the practice of the British Parliament." The legislative institutions of the other colonies, with the solitary exception of Western Australia, are of a similar character, and considering that they are yet in their infancy, their general working and results, although far from being all that is desired, must be regarded as satisfactory and full of good promise. As in most young communities, where all the people are acquainted with each other, the dignity of parliamentary life is occasionally disturbed by scenes arising from allowing feelings of a personal character to influence, more largely than in older countries, the policy and utterances of those entrusted with the business of legislation, but, on the whole, there is observable a genuine

interest in promoting the material welfare of the country. The general intelligence and good sense of the community are never more strikingly illustrated than during the parliamentary elections. Although the electoral power is completely in the hands of the people, the working class vote being largely in excess of that of the capitalist portion of the population, it is rarely that a candidate is found appealing to popular prejudices. In New South Wales the popular cry at the last general election was "National Education," and it was by a parliament thus elected that a Licensing Act was passed whereby the ratepayers of the colony have become entrusted with the power of determining what additional public-houses are necessary in their respective districts. In Victoria the political world is divided into two great sections, one holding extreme protectionist views, the other as zealously championing the doctrines of free trade. In none of the colonies have the socialist theories which so largely influence working class thought and action in continental Europe gained the slightest foothold. Schools and railways are regarded as the leading requirements of the Australian people, and no cost is deemed too great or too burdensome in securing these.

Of course there is a reverse side to the picture, one in which unwise national expenditure, official jobbery, and gross political corruption form conspicuous features, but these are less prominent than in older communities, the members of which are more experienced in the ways of responsible government, and frequently possess a greater amount of leisure at their command. Perhaps the progressive character of Australian legislative policy is best shown by the manner in which the proceeds of the various public loans are applied. In New South Wales the expenditure for services authorised to be provided for by loans, dating from the commencement of the loan account in 1853 to September 30, 1881, is as follows :—

	£	s.	d.
Railways	14,194,733	8	4
Telegraphs	476,207	17	7
Immigration	569,930	0	0
Sewerage and Water Supply of Sydney	400,000	0	0
Land resumed from Sydney Municipal Council, under Water Supply Act	43,261	14	6
New Water Supply for Sydney	84,190	17	2
New Sewerage Scheme for Sydney	14,681	4	9
Public Works, Queensland, when it formed part of New South Wales	49,855	8	6
Improving Navigation of Harbours and Rivers..	1,056,258	6	0

	£	s.	d.
Public Works and Buildings	936,549	14	8
Roads and Bridges	439,470	12	8
Total	£18,265,139	4	2

The expenditure of the loan revenue obtained by the other colonies is of a similarly practical and useful manner, contrasting forcibly the fate of many foreign loans, the repudiation of which has brought ruin and misery to thousands of English families. The annual revenue and expenditure of the various colonies in 1880 was as follows :—

Colony.	Revenue.	Expenditure.
	£	£
New South Wales	4,904,230	5,560,078
Victoria	4,621,282	4,875,029
South Australia	2,027,963	1,923,605
Queensland	1,612,314	1,673,695
Western Australia	180,050	204,338
Tasmania	439,780	423,745
New Zealand	3,283,396	4,019,850

It will be observed that in most instances there is a tendency to allow the expenditure to be in excess of revenue. This is a result of the many works of a public character necessitated by the progress of settlement. Moreover, the various Colonial Governments frequently have to perform local duties which in England or the United States would be discharged at the cost of those immediately benefited. The Australians have, however, considerable faith in the elastic nature of their revenues, and with good reason, considering the rapid expansion of their principal commercial and industrial interests. In New South Wales, Mr. Watson, the Colonial Treasurer, estimated that at the close of 1881 there would be a surplus of nearly 1,200,000*l.*, after providing for every service of the State in the most liberal manner, but his estimate was found largely exceeded, the real surplus amounting to over a million and a-half. In the larger colonies a portion only of the annual revenue is obtained by taxation, the remainder being the proceeds of Crown leases and sales of land. It is here that the future difficulties of Australia will have their origin, for a period must come, sooner or later, when the complete alienation of the public lands will necessitate the raising of the whole of the revenue by means of taxation. In New South Wales the total area of land alienated from the foundation of the colony to the end of 1880 was 28,795,924 acres. In Victoria the area of land alienated was 12,152,526

acres. A considerable portion of the non-alienated lands are in the occupation of squatters, several of whom occupy enormous tracts of country, especially in the interior, where may be found "runs" of from fifty to one hundred square miles each, in the possession of single individuals. Recent explorations in the north and west have shown that the extent of country available for pastoral and other purposes is far more extensive than had previously been imagined, and at the present moment the tide of settlement is gradually turning in the direction of the northern portions of South and Western Australia, which, but a few years ago, were simply large blanks on the map. In fact, experience is proving that the real capabilities of Australia have been considerably under-estimated, and that their actual magnitude will be found to surpass the most sanguine anticipations.

Some indication of the social progress of Australia is afforded by the leading items of State expenditure, among which those relating to education occupy a prominent place. It would seem as if the Australians were determined, no matter how great the trouble or cost, to possess the means of imparting a certain amount of practical instruction to their offspring, and so powerful was the pressure of public opinion in this direction in New South Wales, some two or three years ago, that the Premier, Sir Henry Parkes, one of the ablest legislators Australia has yet produced, was enabled to secure the adoption of an Act whereby the whole of the educational machinery of the colony was placed in the hands of the State. The teachers are now recognised as civil servants, and are paid by fixed salaries, the school fees being paid as revenue into the Treasury. Education is compulsory, and provision is made for educating children unable to pay school fees, and for maintaining schools for neglected children. "There are," says Mr. Richards, "150 denominational schools in the colony, but these will cease to be supported by the State after 1882. General religious instruction is provided for under the Act. It may be imparted in all the public schools, by the teachers, and by clergymen of various religious denominations, who are entitled to appropriate one hour a day for the purpose." The total number of public and private schools in New South Wales, at the close of 1880, was 1,910, with 3,393 teachers, and 169,441 scholars. In Victoria the system of State education was adopted in 1873. At the close of 1880, the number of State schools in that colony was 1,810, with 4,215 teachers, and an average attendance of 119,520, the actual num-

ber of children on the rolls being 229,723, although various deductions would reduce these figures to 195,736. In South Australia and the other colonies popular instruction is provided for on an equally liberal scale. Nor are means of higher education wanting, the universities, grammar schools, and collegiate institutions at Sydney, Melbourne, Adelaide, and elsewhere furnishing ample facilities to those desirous of obtaining a more extended knowledge. Australian intellectual progress is most conspicuous in Victoria, especially in Melbourne, which boasts of a public library of which any European city might fee proud. Its erection has cost, from first to last, no less than 111,604*l.*, and is still unfinished. The total cost of the institution, including purchases of books, salaries, &c., was 313,162*l.* It contains 131,992 books and publications of every description, and is open free from 10 A.M. to 10 P.M. on week days, the attendance during 1880 being 261,886. Free libraries have also been successfully established in Sydney and other places. In most of the colonial country townships Schools of Art have been established. These are something like the mechanics' institutes of Lancashire and Yorkshire, but of a less pretentious character. They generally consist of a lecture room and a lending library, the former being used for public purposes when required. The difficulty and cost of travelling prevent the delivery of anything in the shape of systematic courses of lectures save in a few of the larger townships. Victoria also takes the lead in art and technical education, the Melbourne National Gallery, at the end of 1880, possessing no less than 8,290 works of art, including 93 oil paintings and 177 objects of statuary. In connection with the National Gallery are a school of painting and a school of design. The former was attended, in 1880, by 5 male and 33 female students; and the latter by 46 male and 107 female students. "Schools of design have been established," says Mr. Hayter, "at twenty-two places in Victoria in connection with a Royal Commission for promoting technological and industrial instruction. The subjects taught comprise practical geometry, mechanical and architectural drawing, isometrical perspective and freehand drawing, figure drawing, ornamental drawing from models, flat drawings, and from nature. Each school receives 2*s.* 6*d.* from Government for every pupil who attends at least eight times in one quarter, besides which, fees, varying from 2*s.* to 10*s.* per quarter, are paid by pupils. The number of pupils on the rolls on the 31st of December, 1880, was 1,716, of whom

1,313, or more than three-fourths, had attended eight or more times during the quarter ending that day. An exhibition of the works of pupils is held yearly in Melbourne, and local exhibitions are held in other towns." Classes for instruction in art and science have formed with an institution known as the Sydney "Technical College," conducted by members of the Sydney School of Arts, and classes for instruction in drawing and painting are to be established at the Art Gallery, which is now being maintained at the cost of the New South Wales Government. Melbourne possesses a fine Industrial and Technological Museum, and very shortly Sydney will open one of a similar character. Schools of mines have been established at Sandhurst and Ballarat, in Victoria, in which scientific instruction is imparted in a thoroughly systematic manner. There are museums and botanic gardens at Sydney, Melbourne, Brisbane, and elsewhere, and the popularity of these institutions is evidenced by the steadily increasing attendance at each.

It should, however, be remembered that the Australian climate is one which, during the greater part of the year, renders outdoor life and amusements more enjoyable than in England, and this, combined with moderate hours of labour and high rates of wages, leads the labouring classes to devote a considerable portion of their leisure time to the "business of pleasure." Every township has its cricket or football club, and in the city and suburbs of Sydney alone there are said to be nearly a hundred of these. Every description of physical pastime has its votaries, and on the Saturday afternoons during the summer months the waters of the harbour are studded with sailing-boats, manned by clerks, shop assistants, and others, who in England would rarely be found in possession of such effectual means of counteracting the effects of confined occupation. This explains the naturally healthy appearance of the colonial population, although the features of the native-born Australian do not always possess the ruddy freshness of the English countenance. Another physical characteristic of the Australian population is the absence of the stunted forms which have become characteristic of the populations in many parts of the English manufacturing districts. The "cornstalk," as the native Australian is designated, is usually of tall stature, although of somewhat thin proportions, and were the British military authorities to seek for recruits at the Antipodes, they would not find it necessary to adopt the diminished height which has been forced upon them in the case of home recruits.

The natural love of pleasure, combined with the comparative ease with which the means of indulging it can be obtained, has a prejudicial influence in one respect on the Australian character, by creating a spirit of impatience, which prevents anything like patient steady application in the acquirement of scientific or artistic knowledge. The student endeavours to learn in a few weeks that which requires months to properly master. It is the same in many industrial occupations. The work is good, but there is an absence of finish, strongly suggestive of undue haste. This may, however, be found attributable to the fact that very frequently the demand for labour is so largely in excess of the supply that one workman has to do the work of two or three. Trades unionism is all-powerful in every part of the Australian colonies, but no opposition is found to be offered by the men to the introduction of labour-saving appliances, and in the building trades nothing is more rare than the spectacle of a man carrying a hod of mortar up a ladder, as in England. A pail, rope, and pulley are invariably employed for this purpose. The policy of Australian trades unionists appears to be confined principally to the regulation of the hours of labour and the rates of wages. Eight hours forms the ordinary working day, and the adoption of the eight hours system is annually celebrated in each of the colonies by trades processions and festivities on a large scale. In many of the metropolitan houses of business the hours are considerably longer, and in Sydney complaints are being made to the effect that clerks and book-keepers are often compelled to remain at the desk from 9 A.M. to 10 or 11 P.M. The colonies are no places for clerks, book-keepers, and most classes of professional men.

The leading industries of Australia are those connected with pastoral, agricultural, and mining pursuits. The former furnish occupation to a large number of hands, but the bulk of the population are engaged in mining or manufactures. The mineral resources of Australia are practically unlimited and have scarcely been touched, notwithstanding the vast quantities of gold and other metals which have been obtained. Copper is abundant in South Australia, and the New South Wales coal and iron fields are said to be as rich as those of the United Kingdom. Yet all the industries in connection with those are still in their infancy. For instance, hydraulic mining, as practised in the United States, is almost unknown in New South Wales, in some parts of which the mining appliances in use are

of a rather primitive description. But a change is impending; increased facilities of communication with the United States having aided in awakening the colonists to a sense of their deficiencies in this respect. Notwithstanding the abundance and cheapness of native coal and iron, considerable difficulty has been experienced in successfully establishing colonial iron manufacturing industries. In New South Wales the Fitzroy and Lithgow Ironworks are equal in every respect to many found in England, yet such is the greater cheapness of labour and superior productive skill at the command of English employers that they can manufacture goods, convey the same to Australia, and place them in the market at prices lower than those asked by their colonial brethren. In Victoria prohibitory customs tariffs have been adopted with a view to "protecting" the native manufacturer from the effects of foreign competition, notwithstanding which the Melbourne warehouses are filled with British goods, which are retailed at prices not much higher than are asked in London. In New South Wales the various manufacturing industries have no fiscal regulations to interpose between them and outside rivalry. Yet they seem to strive and prosper. In 1871 the total number of industrial establishments of every description in the colony was 6,827. In 1881 it was 14,474, employing 27,022 hands. These figures, of course, include the smallest as well as the largest workshops. "The number of manufactories in the years quoted," says Mr. Richard, "cannot, however, be taken as the only criterion of advancement, the adoption of labour-saving machinery of late years having concentrated in large establishments much of the work previously performed in small workshops." The manufactures alluded to by Mr. Richard include those in which are carried on processes connected with the production of agricultural machinery, leather and leather goods, woollens, articles of food, building materials, clothing, furniture, saddlery, and the like. In Victoria, about the same time, the number of manufactories and workshops was 2,469, employing 38,141 hands; the materials used during the year being valued at 8,012,745*l.*, and the manufactured produce at a sum of 13,384,836*l.*, leaving a profit of 5,384,836*l.* for division among employers and employed. The value of the buildings, plant, &c., of the various manufactories and workshops is estimated at 7,465,328*l.* The manufactures of Victoria are more numerous, and in some instances more important than those of New South Wales, but the average

degree of skill and productive capacity is about the same in both colonies. Some idea of the general occupations of the inhabitants of Victoria may be gleaned from a rough analysis of the Census return for 1881, recently published by the Victorian Government, which shows that of the 862,346 inhabitants of the colony, 4,541 were engaged in the general or local governments, or the defence or protection of the country; 13,921 in literature, arts, and science, with their associated occupations; 38,816 in entertaining and performing personal offices for man; 16,151 in buying and selling, keeping or lending money, houses, or goods of various kinds; 18,232 in the conveyance of men, animals, goods, and messages; 124,155 in working or cultivating land, raising or dealing in animals, or following pursuits subsidiary thereto; 26,677 in working or dealing in art or mechanic productions in which matters of various kinds are employed in combination; 34,563 in manufacturing or selling food and drinks; 8,273 in working and dealing in animal and vegetable substances; 47,492 in working and dealing in minerals; and 29,252 in various branches of ordinary or undefined labour; the remainder of the number consisting of persons of independent means, or "no occupation stated," married women and children. In New South Wales the proportions are somewhat similar to the foregoing, but in Queensland, where manufacturing industry is yet in its earliest infancy, the principal occupations are those connected with gold and tin-mining, sugar cultivation, and agricultural and pastoral pursuits generally. In South Australia the arts of agriculture are more largely practised than in the other colonies, enormous quantities of wheat being annually produced both for home consumption and for export. The copper mines of the colony, which are among the richest in the world, furnish employment to considerable numbers of miners. In Western Australia the leading industries are the cutting and export of Jarrah and other hard timbers, and the collecting of pearl-shell. To these will shortly be added pastoral pursuits on a large scale, millions of acres of newly discovered grazing land in the north having been taken up for the purpose of being stocked with sheep. In Tasmania fruit cultivation is extensively carried on, also tin-mining, one mine alone producing in a single year no less than 2,160 tons.

The social condition of the inhabitants of the various colonies is largely influenced by surrounding circumstances, but, on the whole, it is equal, if not superior, to what is generally found in

England. Australia is essentially a land of self-help, and many of those who now boast of incomes ranging from 5,000*l.* to 20,000*l.* per annum, commenced their career with very little assistance beyond that afforded by the possession of steady, industrious and business habits. With the increased accumulation of wealth, tastes of a refined and intellectual description have sprung up, the development of which is being rapidly fostered by the repeated visits of the more affluent members of the community to the parent country. In the neighbourhood of Sydney, Melbourne, and other Australian cities are to be found numerous large and handsome residences, beautifully furnished and adorned with costly statuary, pictures, and other works of art, utterly at variance with the loose ideas so prevalent in England of social life at the Antipodes. Among the labouring classes the effects of abundant employment and remunerative wages are strongly preceptible, despite the counteracting effects of the public-house. In Sydney, the greater portion of the suburbs has been cut up into allotments ranging in size from several acres to a quarter of an acre each. The greater portion of these have been purchased on easy terms by working-class families, and in many instances houses have been erected on the same, principally with the assistance of building societies, which in Australia are both numerous and in possession of ample funds. The price of building land and the cost of house construction are considerably higher than in England, yet a steady, sober workman has it always in his power to become his own landlord with greater ease and rapidity than in the mother land. In Victoria, in 1880, there were 47 building societies, possessing 18,052 members, and holding assets to the value of 2,804,295*l.* against liabilities estimated at 2,352,808*l.* The figures were somewhat higher in previous years, but there are not wanting indications that they will soon become largely exceeded. In New South Wales the operations of the land and building societies are on an even more extended scale. Curiously enough the principles of industrial co-operation as applied to trading purposes do not appear to have taken deep root in Australia, although the prevailing high prices of articles of food and clothing are such as Lancashire and Yorkshire operatives have never experienced, save during the period immediately preceding the repeal of the Corn Laws. This appears, however, to arise from the circumstance of a larger proportion of the population being employed in the work of distribution than in that of production. That provident habits are

appreciated by the Australian labouring classes is shown by the fact that the number of friendly societies is considerable, the proportion of members to the general population being higher than in England. In Victoria, at the close of 1880, there were 32 societies, with 748 branches, 46,074 members, and an annual income of 171,987*l.*, together with an invested capital of 384,744*l.* The various savings' banks are liberally patronised. In New South Wales, at the close of 1880, there were 48,029 depositors, the amount of deposits being 2,075,856*l.* Twenty years ago the value of the deposits was 615,000*l.* "It is intended," says Mr. Richards, "to amalgamate the New South Wales Savings' Bank and the Post Office Savings' Bank, and to invest the money in public securities, thus giving to depositors the guarantee of the State for the payment of both principal and interest." During the same period in Victoria the number of depositors was 92,114, the balance of their deposits being 1,661,409*l.* Temperance societies are numerous, and contribute materially to the formation of public opinion, especially in New South Wales, where a stringent Licensing Act has been adopted, based on the principles of Local Option and Sunday Closing.

As regards crime, with the exception of the heavier class of offences, such as murder, burglary, and so forth, which are comparatively few in number, the proportion of offences for which arrests are made to the number of population is about the same as in the United Kingdom, and would be still less but for the lax manner in which, until recently, the public-house system was regulated. Considering the circumstances under which the work of colonisation was commenced, this fact is full of hope and encouragement for the future, especially in connection with the spread of religious feeling, as exemplified in the increasing number of churches and chapels in the various colonies. Amusements of an outdoor character are numerous, as might naturally be expected in such a bright and sunny country as Australia, where the cold damps and fogs of England are unknown, but there is observable a tendency unduly to exalt talents and skill of a purely physical nature. Moreover, the early age at which young people become emancipated from parental control is exercising an injurious effect by rendering the new generation impatient of anything in the shape of restraint on their thoughts and actions. To this is unquestionably attributable the prevalence of "larrikinism"; the "larrikin" being a kind of semi-educated "rough," infinitely more mischievous and dangerous

than his English brethren. But even here are to be found signs of possible amelioration, and with an increase in the number of free libraries, museums, art galleries, and institutions of a similar character, a change for the better may reasonably be hoped for. It should also be remembered that the ranks of the larrikin population are continually being recruited from the "black sheep" of English families sent out to Australia under the mistaken notion that on landing they will at once commence the all-important work of self-reform. No man need starve in Australia if he be willing to work, but the country is not one for clerks, book-keepers, and others of a similar class. It is the workman, or, still better, the workman capitalist, who is most required, and for generations to come he will always find a wide field for the exercise of his powers. The want of proper agreement among the different colonies has much to do with the prevailing want of knowledge respecting the leading character, features, and advantages of each. With Australian federation, so eloquently recommended by Sir Henry Parkes, all this would cease, and Australia be found occupying the high position among the nations to which she has become so justly entitled by reason of her industrial and commercial importance.

JOHN PLUMMER.

THE ROYAL COLLEGE OF MUSIC.

AFTER many years of discussion, a scheme for raising up a National Music School in England, upon what promises to be a permanent basis, seems to have come within the range of practical politics, and the announcement, made as the "Companion" is passing through the press, that a third of the capital sum of 300,000*l.* required to establish the institution has been promised, brings its opening within measurable distance. The progress made and the promised donations of 100,000*l.* are, it is needless to say, largely due to the influence and personal exertions of the Prince of Wales and his brothers, who have spared themselves no effort to give the undertaking a fair start, and it now only remains for those who have charge of the important work of organizing the "Royal College" to profit by the *prestige* which the personal exertions of the Princes have already given to it, and to interest the country generally in what must, if it is to be

worthy of its name and object, receive national support. Before we proceed to describe the steps already taken and to give a sketch of the work which it is proposed to do, it will be interesting to show what has been done in the same direction in other countries and in England up to the present time.

The principal music school in FRANCE is the Conservatoire for Music and Declamation, which was established in 1795 by the Convention Nationale, and consisted at the outset of a combination, under the sanction of the Government, of two previously existing schools, the École Royale de Chant and the Institut National de Musique. Its scheme has undergone many modifications, and Bonaparte had a share in 1800 in one of its reorganisations, but in its main lines there has been comparatively little change. It has at its head a director who presides over the artistic branch; a manager and secretary to assist him in the general business arrangements, and an official of the Government who overlooks the whole establishment. The teaching staff numbers upwards of eighty and the roll of students exceeds six hundred. For the non-boarders the education is entirely gratuitous and their attendance is registered by an officer specially appointed for the duty. Admission is to be obtained only as the result of examinations, held annually before the winter term; among the requirements being that the candidates shall be under twenty years of age, that they shall have some facility in sight-singing, and possess a pleasing appearance —the last a genuine French stipulation, but by no means needless in a profession where success so largely depends upon style and manner. The whole cost of maintaining the school is met by a grant, which finds a place each year in the budget of the Minister of Finance. The amount of the subsidy has varied very considerably, but it has at length nearly reached the point of the original vote of 240,000 francs, after having in the course of years stood at less than half that amount. The income of the Conservatoire is sufficient to enable the directors to give valuable money prizes in each year, and the blue ribbon of the school—the Grand Prix de Rome—so named from the requirement that the *lauréat* shall pursue his studies in the Papal city—is also awarded out of funds which were first obtained for the purpose about eighty years ago. The subjects of instruction include all the members of the instrumental family, vocal music, solo and concerted, the opera, including specially the comic opera, which is so essentially a French school of composition,

harmony, composition, and part writing. Special attention is given to the practice of solfeggio, both by the individual students and in class, and it is to this that the efficiency of many of the students as vocalists is chiefly due. The education of pupils for the stage is made a matter of the first importance, and the two departments of musical and dramatic education have their separate committees, with the director at the head of each. Much interest is excited throughout the musical world of Paris in the annual examinations of the students which are publicly held, and in the distribution of the prizes by the Minister of Public Instruction and the Fine Arts, accompanied as it usually is by the bestowal of distinctions from the Government upon the chief professors, who receive the decoration of the Legion of Honour in its various grades. Among the advantages open to the student is the *entrée* to the valuable library and richly stored museum. The present director of the Conservatoire is M. Ambroise Thomas, well known in England through his "Mignon" and other operas, who succeeded Auber in 1871. The composer of "Masaniello" had in his turn taken up the reins in 1842 from Cherubini, the great contrapuntist and composer, who, in 1822, had become the third head of the school in succession to Perne and Sarrette, the latter being the first *chef*. In the roll of professors since the foundation of the Conservatoire will be found nearly all the eminent musicians of France, and its present list is strong in good names. There are several provincial schools in connection with the central Conservatoire, among them being those of Lille, founded in 1826, Toulouse, Dijon, Nantes, and Lyons.

In ITALY, the land of song, as it is esteemed, not only by its natives but by other nations, who give the first place on the lyric stage to Italian opera and Italian artists, the music schools are all of comparatively recent growth, although they may be said to be the legitimate successors of the famous academies of ecclesiastical origin, whose sons were the founders of the Italian School of Music. The Royal Musical Institute of Florence was formed in 1860, and two years later was thrown open for public instruction, the whole of the expenses being met by a grant from the State, amounting to little more than 1,400*l.* a-year. The course of training includes all branches of vocal and instrumental music, and the government is vested solely in the President, whose office is permanent, but unpaid. In return for its subvention, the State receives from the Institute the services

of the students and professors at all State ceremonies, when music is introduced. The number of pupils averages above two hundred, all of whom are subject to an entrance examination, and must be upwards of nine years of age on admission. A diploma is granted to all pupils if they pass the final examination, and its possession is found to give them a preference over other candidates for public employment. The Council of the Institute is composed of three resident members appointed by the Minister of Public Instruction, and during their term of office, which is triennial, they are not allowed to teach in the Institute. All the pupils are gratuitously taught, and reside at their own homes. At Milan, the second, if not the first, Italian music school was founded about 1484, but the Royal Conservatoire, founded by a decree of Napoleon Bonaparte in 1807, was the first public institution open to students, and its operations, especially under the principalship of Signor Lauro Rossi, have been remarkably successful. It gives a fair literary education, in addition to complete musical training. The number of pupils is upwards of two hundred, of whom about fifteen are annually sent forth fully equipped as teachers or artists. The staff in this case consists of about thirty professors and thirty teachers, the latter of whom are selected from the more advanced pupils, and receive no salary. The pupils pay small fees, but the greater part of the expenditure is met by Government grant. Naples was formerly the home of no fewer than four historic schools of music established for the reception of orphans, foundlings, and other poor children who were instructed in religion and music under the supervision of the priests. From these schools came forth many of the most famous Italian musicians, including Scarlatti, Durante, Porpora, Jomelli, and Pergolesi, and their successors, on the suppression of the last of these semi-monastic establishments, in 1808, became the first directors of the Royal College of Music. It has a large department of resident students numbering one hundred, who are educated freely, in addition to a body of one hundred and twenty day students who also receive free training. Students who pay fees are also admitted. The musical director, who is supreme in all the arrangements relating to the artistic side of the College, has the assistance of a staff of examiners. Each year there are trials and competitions in public, and the pupils also give representations in the theatre of the Dramatic College. One of the rules of the institution is to confine the actual lessons in music to three days in each week, two other days being reserved

for vocal and instrumental concerts, and for the study of classical works in the College library. The day pupils are taught by a selected number of the resident pupils, and the work is supervised by some of the professors, who are styled inspectors. The supreme control and administration of the College in all its branches is entrusted to three unpaid Governors, nominated by Royal decree. Among musicians of European fame, who owe their training to the College, may be named Bellini and Sir Michael Costa, and Donizetti and Mercadante were among its directors.

The famous school of BRUSSELS may be said to have acquired a fame second to none of the academies of music, largely owing to the ability with which it was directed by M. Fétis, the author of the "Biographie Universelle des Musiciens," and father of its present principal. It is in many respects a model of what such institutions should be, and as regards economy of administration it is singularly noteworthy. The general administration is placed in the hands of a commission of seven members, nominated by the King, who meet once a month, and annually make all necessary arrangements with the director, and draw up a report. The director and about fifty professors form the teaching staff for between five hundred and six hundred students, and the discipline, both for teachers and for taught, is very stringent. The holidays are, in fact, so short, that the education may almost be said to be continuous, there being only two vacations in the year—from Palm Sunday to the first Sunday after Easter, and from August 15 to October 1. The education is absolutely free to Belgians of both sexes above seven years of age, who are able to read and write and to bring certificates of birth, but after reaching the age of twelve no candidate is admitted who is unable to read music. Natives of other countries are admitted on what, in comparison with the fees in this country, are merely nominal terms, viz., 8*l*. a-year. The income of the Conservatoire is derived from a vote of the Chambers, and from a subsidy of the municipality and the province; while, as an encouragement to the more distinguished scholars, the proceeds of the concerts given by the professors and pupils in the ducal palace and elsewhere are divided among them. All prizes are given after competitive examinations, and not only are the deserving rewarded, but those who make absolutely no progress are dismissed. The full course at the Conservatoire occupies about eight years, so that it is no idle boast to assert that a pupil who can obtain the first prize for singing, composition, or instrumental performance

is qualified to take any position open to an accomplished artist. The instruction given in the Conservatoire is only intended for those who wish to follow music as a profession, but as it is obvious that no control can be exercised over the students after they leave the school it is virtually open to all comers. Among the pupils there are always a certain number from provincial towns whose expenses are paid by the respective town councils, on the plan which was adopted with some success in England in connection with the late National Training School at South Kensington. At Liège there is another Conservatoire, worked on the same lines as the greater school at Brussels, under direct authority from the King, who appoints the director, and a commission of seven members to regulate its affairs. It differs, however, in one important particular—all candidates for admission intended for the musical profession, whether natives or foreigners, are taught without charge, but amateurs are required to pay a fee of 80 francs a-year.

The great Austrian Conservatoire at VIENNA is a school with a history, its foundation having been indirectly due to the efforts of a number of benevolent ladies among the Viennese to assist the sick and poor of the districts beyond the Danube by giving a concert for their benefit. The principal worker in the good cause, the Baroness von Amstein, obtained the consent of the Emperor for a monster performance in the Imperial Riding School, his Majesty undertaking to defray the cost of fitting it up for the occasion as a concert hall. The scheme excited general enthusiasm, and a veritable Handel festival was the result, the great Saxon's oratorio, "Alexander's Feast," being given with Mozart's additional accompaniments by a band and chorus of 720 performers, including representatives of all sections of the townsfolk. Herr Sonnleithner, a Privy Councillor, suggested the enrolment of all who had taken part in the performance into a permanent association with the aim of founding a music school, and in 1816 a scheme was drawn up, and a singing school was opened in the following year. Two years later a violin school was added, and in 1821 the establishment was further enlarged. Progress then became the order of the day, and the Conservatoire, as it now stands, still combines the ordinary work of a musical academy and a vocal and orchestral union, the whole being united under the title of "The Society of Friends of Music in Austria." The association is governed by a president, vice-president, and twelve members

triennially elected and eligible for re-election. The administrative and artistic sides of the management have their own officers, and the fees are probably the lowest in any European school. The Association—"Gesellschaft der Musikfreunde"—has secured much valuable support for its school from the Imperial family, from the Town Council of Vienna, and from other sources, and the connection between the students and the whole body of musicians in the city and country has been attended by many advantages, not the least of which is the annual presentation of the works of the great masters at the concerts given by its orchestral and choral unions. The Society possesses a valuable library and museum, has its own house, and is in every way one of the most remarkable illustrations of what can be accomplished by musical co-operation. The number of students in the conservatoire is over 700, and Herr Hellmesberger, the director, has a staff of about sixty professors. Joachim, Ernst, and Richter the famous conductor, received their education within its walls. The Conservatoire of Prague has an instrumental school and a singing school, the latter divided into classes for concert and operatic performers. In the former the term of education is six years, in the opera school from two to three, and in the concert school two. All the pupils receive a general education in addition to their musical training. Natives are taught gratuitously, and for foreigners the cost is limited to a modest fee of 5*l.* a year in the instrumental and concert schools and 6*l.* 13*s.* in the opera schools.

The far-famed Conservatoire at Cologne, which has for its head the eminent Dr. Hiller, whose music of late years has found much favour in English concert-rooms, is one of the most important of the German schools. It owed its origin, like the school at Vienna, to a Society of Friends of Music, who formed themselves into a Verein for the purpose of establishing a high-class academy. It has acquired a higher reputation than any other school established under private as distinguished from national control, and among many eminent musicians who owe their training to it is Herr Max Bruch. In Berlin the Conservatoire of Music and the Singing Academy have a high reputation, and the Berlin Academy of Arts has a musical section which affords training to a considerable number of pupils. There is also a school in which singers are trained for the famous Dom Choir, and in the Royal Institute of Church Music twenty pupils receive free instruction in the organ, pianoforte, violin, singing, and the theory and history of music.

The little kingdom which has been the cradle of the "Music of the Future," has not forgotten its duty to the music of the present, and the Royal Conservatoire at MUNICH, founded in 1846, under the immediate control of the Minister of Public Instruction, is an institution of considerable importance. The period of training is three years, with graduated fees of four guineas a-year for the first course and eight guineas for the second, the latter sum being remitted in the case of the more promising and necessitous pupils. The school receives a subvention from the Government equal to about 583*l.* a-year. At Würzburg the object of the local Musical Institute is to give instruction in vocal rather than instrumental music. Here, again, a State subsidy is a chief source of income, but as a compensation to the country the instruction is gratuitous, and many amateurs are allowed to become pupils.

At LEIPZIG the Gewandhaus with all its noble musical associations gives a home to the Conservatoire, which is governed by five directors appointed by the King and the Minister of the Home Department. It owed its foundation, in 1843, to Herr Blumner, whose legacy of 20,000 thalers still produces a portion of its income. The fees paid by the students bring in nearly 2,000*l.* a-year, and the remainder of its income is supplied by small donations. On its foundation Mendelssohn was virtually its principal, although nominally only one of its directors, and it was while he was at its head that Mr. Otto Goldschmidt was one of the students. The English musicians who have completed their education under its auspices include John Francis Barnett, Arthur Sullivan, and Walter Bache. Dr. Sullivan went to Leipzig as the Mendelssohn Scholar on the foundation raised in England for a scholarship named after the composer, to be held at the Conservatoire which owed its very existence to his influence and interest. Dr. Swinnerton Heap, Mr. William Shakespeare, Mr. Eaton Faning, and two ladies, Miss Crawford and Miss Maude V. White, have also studied under the same valuable scheme. Not the least of the privileges enjoyed by the students is that of gratuitous admission to the rehearsals of the Gewandhaus concerts and to the quartett concerts, while they are also allowed to take part in the oratorio performances. A school which has numbered among its professors Mendelssohn, Schumann, Hauptmann, Ferdinand David, Gade, and Richter, is never likely to lack students.

When we turn to our own country, we find that until a recent

date its only music school worthy of the name has been the Royal Academy, founded by the eleventh Earl of Westmorland, under Royal patronage, in 1882, and incorporated by Royal Charter in 1830. Its governing body consists of a president, four vice-presidents, and a board of directors, from whom are selected a committee of management. This committee, with the principal, who has always been a professional musician, control the internal arrangements. Its first student, admitted without ballot on the recommendation of George IV, was William Henry Holmes, while among the other foundation students, present on the day of its formal opening, March 24, 1833, were T. M. Mudie, Henry Greatorex, H. G. Blagrove, and Kellow J. Pye, and the teachers engaged to instruct them included J. Cramer, Bochsa, Crotch, F. Cramer, and Potter. The principals from the foundation to the present day have been Dr. Crotch, Mr. Cipriani Potter, Mr. Lucas, Professor Sterndale Bennett, and Professor G. A. Macfarren, who still takes the helm. The chief disadvantages against which the Academy has had to contend have been lack of house-room and lack of funds, and too much honour can scarcely be given to the Professors for the sacrifices which they have made from time to time in order to save the school from financial collapse. The only assistance granted from national funds has been a Parliamentary vote of 500*l.* a-year. The names of a few of those who have been educated at the Academy will be a sufficient evidence of the good work it has done under circumstances of very considerable difficulty, for among them, in addition to the first scholars already named, we find Henry Charles Banister, Robert Barnett, W. S. Bennett, Charlotte Dolby (Madame Sainton-Dolby), Adolfo Ferrari, H. W. Goodban, Charles and Thomas Harper, James Howell (the double-bass player), F. B. Jewson, Kate Loder, Charles Lucas, H. C. Lunn, G. A. Macfarren, Brinley Richards, Charles Steggall, John Thomas (the harpist), and many others.

Until Mr. Henry Leslie endeavoured to establish what he termed the National College of Music, with the aid of the Marquis Townshend, the only other music school was the London Academy, a private establishment, of which Dr. Wylde is the principal, but the new scheme only survived two years, when the funds guaranteed by the Marquis came to an end. In 1876 another effort was made to found a school on a wide basis, with scholarships, giving gratuitous training, and, in a building furnished by the liberality of Sir C. J. Freake, what was termed

the National Training School for Music opened its doors. The management of the school was taken in hand by a committee, which included the Duke of Edinburgh, as Chairman; Prince Christian; the Chairman of the Society of Arts; the Lord Mayor; the late Sir Henry Cole, and other amateurs. The first principal was Dr. Arthur Sullivan, who was succeeded by Dr. Stainer. At the close of the term of five years, for which the scholarships were guaranteed, the necessity of closing the establishment became obvious, and after a brief reprieve it was brought to an end at Easter, 1882. During the period of its existence negotiations for union with the Royal Academy were in progress, as noted from time to time in the musical retrospect in each year's "Companion," but all efforts to arrive at a satisfactory working basis failed, and now we have before us the scheme of the Royal College of Music, which is to be established without reference to the continuance of the Royal Academy.

The discussions on the subject, which at one time seemed likely to pass away without result, were brought to a point mainly by the energetic action of the Prince of Wales, who, on the 28th of February last, invited a number of representative men to meet together at St. James's Palace to consider the proposals of His Royal Highness in reference to the Royal College of Music. The gathering, justly described afterwards as "one of the most remarkable meetings ever held in London," was attended by the Dukes of Edinburgh, Albany, Cambridge, and Teck, the Primate of the English Church, the leading members of both Houses of Parliament, the chief ambassadors, and some representative citizens of London, and when it is added that after the opening address of the Royal Chairman, the resolutions were moved and seconded by the Duke of Edinburgh, the Archbishop of Canterbury (representing the Church and all religious bodies), the Earl of Rosebery (representing the Lords Lieutenant), the Lord Mayor (representing the municipal bodies), and Sir Stafford Northcote (representing the Legislature), it will be seen that the description was more than justified. The fact that no professional representative of music was asked to speak, was perhaps unfortunately calculated to wound the always acute sensibilities of musicians, and was felt by many to be a matter for regret. The sketch of the scheme which the Prince gave to the meeting suggested a hundred students as the minimum number with which the College ought to be constituted, half of these being educated gratuitously, and half by payment, the

competition for the free scholarships being open without restriction. The cost of each student's education His Royal Highness estimated at 40*l.* a year, and the cost of board and lodging at a similar amount. Speaking of ways and means, the Prince pointed to an income of 10,000*l.* to 12,000*l.* a-year as likely to be required, and in this connection the probability of a grant from Government was mentioned. Sir C. J. Freake's building used for the National Training School had, the Prince said, been placed at the disposal of the Council, and the Commissioners of the Exhibition of 1851 had promised a site for it, while the accommodation at Albert Hall would also be available, and the Commissioners were likewise prepared to assist the College with a grant of money. The Duke of Edinburgh dwelt at some length on the function of the College as a training school for church music and dramatic music, and in his forecast of its ultimate development pictured it as the centre of a group of affiliated colleges, whose representatives should, with the council of the Royal College, form a musical senate, to which all questions relating to music and musicians should be referred for determination, while the College would also be invested with the power of granting degrees in music, and would become in a word "the source from which all musical honours should legitimately flow." Thus set forth, the scheme was approved in cordial terms by the subsequent speakers, and at all the meetings which have since been held to promote it, whether at the Mansion House, where the Prince of Wales met a large assembly of provincial mayors and invited their cooperation, or in the country towns where local magnates have assembled in obedience to the Royal behest, little criticism has been offered. Since the meeting at Marlborough House, Dr. George Grove, the accomplished editor of "The Dictionary of Music and Musicians," and the promoter with Mr. Manns of the Crystal Palace Saturday Concerts during the long period of his tenure of the post of secretary to the Crystal Palace Company, has been appointed director of the College, and has been working with his usual energy to obtain support for it. A letter has, by the Prince's direction, been addressed to the clergy throughout England, asking them to commend the College to their parishioners; and it is believed that the necessary funds will be raised to a point at which a parliamentary grant will prove sufficient to supply all that is lacking.

CHARLES MACKESON.

PART II.

ARCHITECTURE AND PUBLIC IMPROVEMENTS, SCIENCE, MUSIC, PHILANTHROPY, LEGISLATION, STATISTICS, CHRONICLE AND NECROLOGY OF 1881-82.

ARCHITECTURE OF THE YEAR.

It cannot be said that architectural work has been on the whole very active during the past year. The state of business, and still more the unsettled and anxious political position of the country in relation both to Ireland and the East, have been adverse to any great expenditure of capital on building, which is affected by such influences more perhaps than any other branch of work except painting and sculpture. The success of our arms in Egypt, which, at the time these words are written, seems to be an accomplished fact, will probably have its effect in stimulating activity in architecture during the coming year, unless any insuperable political difficulty should unhappily damp the effect of the military success that has been achieved. For though it is not always easy to trace the connection directly, it certainly is the case that any success in warfare contributes very much to promote activity in building.

The past year is therefore marked rather by some significant special events in connection with architectural work than by its architectural achievements considered *en masse*. Of these, the most prominent, unhappily, is the death of the architect who may be said to have held at the moment the highest position in public and professional esteem in this country, the late Mr. G. E. Street, R.A. In our last year's article we referred to the contest in regard to the Presidency of the Institute of Architects, which had led to the election of Mr. Street to that office in spite of the formal regulations of the Institution which made the appointment one of rotation. It was hardly two months after the publication of those remarks that the sudden death of Mr. Street, which took place on December 18th, 1881, was announced; the main cause being paralysis, brought on by overwork. Mr. Street was the most eminent and the most gifted of the modern Gothic architects following in the wake of Scott, who had the good fortune to make

the first great success in the new movement. That there should again be such a success as that of Scott was almost out of the question; he had done a great deal of the work to begin with; but Street, who was his best and favourite pupil, showed, in fact, a degree of architectural power and originality beyond that evinced by his predecessor. Scott was remarkable for his exhaustive knowledge of ancient Gothic work, which rendered him peculiarly fitted for the task which he seems to have most enjoyed—the restoration of cathedrals and churches; but his other work was for the most part an accurate reproduction of mediæval art. Street, though an uncompromising mediævalist, succeeded in dealing in an original manner with Gothic architecture, giving to his work a stamp and character quite his own, and apparently aiming rather at reproducing the character and spirit than the actual details of mediæval schemes. In one respect he was peculiarly successful in doing this: in regard, namely, to the character of durability and massiveness in his buildings. He had the greatest dislike to anything like what he himself called "gim-crack" character in a building; everything he did was solid, massive, and, in general, plain in character, for he was very reticent about ornament, and liked to have very little of it, and that little good, having the greatest objection to the habit so often indulged in in modern architecture, of ostentatiously overcrowding a building with as much ornament as could be afforded. Street's most decided success was in his ordinary-sized parish churches. The peculiar quality of his architectural style showed to the greatest advantage in such buildings, which often conveyed to the spectator the idea, especially in the interior, of being much larger than they really were, while their simplicity and solidity in the details further aided this monumental effect. Whether Street was equally successful in buildings on a larger scale may be questioned. He was exceedingly fortunate in having the opportunity, rarely granted to a modern architect, of completing a mediæval building which had never been finished in its own period, viz., Bristol Cathedral, the nave of which had never been built. In this he was exceedingly successful; but in such a case the success really consisted in the power to reproduce accurately the spirit and the forms of the older portion of the structure which he thus completed. In the Law Courts he had a very different problem; he had to plan a very intricate building, and to adapt the Gothic style (for he would never work in any other) to a building of quite a different character and intention

from those from which he drew his inspiration. Whether the plan of the building is satisfactory is a matter which some experience on the part of those who will have to use it will decide. In regard to the exterior, considered from the point of view of architectural design, it is to be feared that few will hold it to be a satisfactory result, considering that it is the largest and most important and costly building erected in this country since the Houses of Parliament. It will probably be viewed as a practical lesson to the effect that a modern architect, who has to deal with important modern problems in architecture on a large scale, should not confine his attention exclusively to the architecture of the past. Mr. Street was practically a mediæval architect, as far as preference (not to say prejudice) in one direction could make him so; and consequently his great building seems to have failed to hit either the necessities or the feeling of his own day.

The same numbers of the weekly architectural journals which announced the death and traced the career of Mr. Street, announced also the death of an architect who was a survival from a past generation, and who in an earlier part of the century filled as prominent a place in the profession as Street subsequently occupied. This was Mr. Decimus Burton, who was born in the year 1800, and died in the same week as Street. The list of his works, which was published in the *Builder*, was of astonishing length, embracing every kind of building, but chiefly consisting of large country houses; and it is a lesson on the fleeting nature of architectural reputation, that a man who in his day could almost command what practice he liked, should have outlived his reputation within a long lifetime so completely that few of those not specially interested in the records of the profession knew his name at all. One of his works, indeed, remains constantly and conspicuously before the public eye, the Wellington arch at the top of Constitution Hill; but few know who designed it, and fewer still are aware that it is finished in a manner quite different from its architect's intention, and that his annoyance at the maltreatment of his design was such as to cause him to keep aloof from all Government employment subsequently. Some additional attention has been directed towards the arch recently, owing to the ill-advised scheme of the Government for improving Hyde Park Corner by moving the arch (about which a word just now); and many people are heard to speak with contempt of the whole combination of arch and

statue as a thing better away altogether. It seems astonishing that so few people should be aware that the equestrian statue was never originally intended to go there, and that it was put up in defiance of the most earnest protests of the designer of the arch. The view of the arch as designed by Burton shows a perfectly different thing; it has an attic with a bas-relief all round it, and is crowned by a "*quadriga*" group, a chariot with four horses, on a much smaller scale than the present statue, and not standing, like the latter, across the roadway and facing towards one side of the arch, but centrally and facing the approach, as sculpture placed in such a situation always should stand. It is hoped that now tardy justice is to be done to Decimus Burton's principal work, at least by removing the obnoxious statue, though we have not heard any talk of completing the arch in the manner originally designed. Apart from these special points in connection with the work of Burton, the coincidence of his death with that of Street reminds one of the extraordinary revolution which has come over English architecture between the professional lives of these two men. In Burton's day the correct application of some leading features of classic architecture, whether carried out in plaster or iron or masonry, constituted the architect's stock-in-trade as far as design was concerned; nor was there any suspicion on the part of such a man as Burton, who possessed somewhat exceptional culture and accomplishments, that anything more than this was needed. In the present generation we have reversed things so completely that the buildings by which Burton obtained his reputation are what no one now cares to enquire the authorship of; they are regarded disdainfully by the rising architects of the present day. The architects of that time seem, however, to have possessed a degree of practical common sense and acquaintance with business which are very valuable attributes, too often underrated in the profession at present: nor can we prophesy at all certainly that the Gothic buildings of the more recent period will not in a generation or so be regarded with as much indifference as that which we now bestow on the designs of the author of the Wellington arch.

The mention again of this erection brings us to say a word about the schemes of the present First Commissioner of Works, which have been brought prominently into notice during the past year. The one that has most attracted public attention is that for remedying what is called "the block at Hyde Park

Corner." This is to be done by taking down and re-building the arch at a considerably lower point in the Green Park, in a diagonal position; cutting off the top of Constitutional Hill, and making a triangular *place*, about which carriages are to circulate. There could be no more striking example of the absurdity of the system under which our public improvements are carried out, than this proposition, which it is to be feared will be allowed to be carried out, since few members of the House of Commons care enough about such points to give any attention to them. The block arises solely from the fact that, for the space between Hamilton Place and Hyde Park Corner, Piccadilly is made to do double duty, and to take both the north and south traffic and the east and west traffic. The difficulty might have been obviated for ever when Hamilton Place was made, by making the roadway rather wider, and running part of it under Piccadilly; but this was supposed to be wrong, because such a thing had not been done before in London. As it is, the block could be done away with in a simple and economical way by continuing Hamilton Place in a gradually sinking road running under Constitutional Hill at the angle by Buckingham Palace Gardens; the levels at the two points being already such that only a little adjustment would be necessary. Instead of this simple and obvious plan, the arch is to be removed, placed down hill, and on the side of an incline, and a large piece of ground is to be cut up into carriage-ways with useless triangular spaces between them, which will give no relief to the carriage traffic that could not have been equally gained by the simple and economical plan already alluded to, and will be a constant source of delay, annoyance, and even danger, to the thousands of foot passengers daily passing along Piccadilly, who will have to steer, as best they may, across a network of carriage traffic intertwining in all directions. A more foolish expenditure of money could hardly be proposed; but mistakes of this kind will be made as long as we entrust such public improvements to those who are brought into office on account of political changes, and not in consequence of their fitness to deal with matters of this kind. Public improvements in architecture and the laying out of streets and public places are matters which have nothing to do with politics, and should be under the direction of a permanent Minister of Public Works, appointed on account of his special knowledge of the subject, instead of being left at the whim of each new holder of the office of First Commissioner of Works, or

of the nameless and irresponsible draughtsman who may devise plans for him.

It is fortunate that such a scheme as the proposed decoration of St. Paul's Cathedral does not come under the supervision of the Office of Works, who would probably be for making their own designs "in the office." We have at least the highest available artistic talent of the day employed upon the suggestion of a scheme; and a large drawing of a portion of the dome, showing the proposed treatment, formed the central object in the architectural room at the Royal Academy this year, the subject being considered to be at least a partially architectural one, and the paintings required to be in subordination to the total architectural effect. The main design, as it was exhibited, was the work of Mr. Poynter, who has given more attention to architectural detail than most painters of eminence (always excepting Mr. Tadema). The drawing gave one segment, comprising about one-sixth of the dome, in order to show completely the treatment of the compartment forming one-eighth of the circumference, as it is intended to divide the surface of the dome into eight sections or panels by painted architectural ribs between the pictorial designs. This method, though it cuts up the concave of the dome into sections, and thus loses what is perhaps the finest part of the interior effect of a dome—the unbroken spherical surface hanging aloft—has the merit of connecting the design with the main architectural division of the substructure, and it is a manner of treatment already suggested in Thornhill's existing paintings, and which, moreover, there can be little doubt that Wren would have approved of. The manner in which these architectural divisions in the painting are formed, by building up one feature upon another, is not in the best or most truly architectural taste, but it may be said in defence of it that it is in the taste, or bad taste, of Wren's days, and is so far suitable; and it must be admitted that in the bold sketch left by the late Alfred Stevens, the sculptor, upon which Mr. Poynter's design is evidently partially founded, the objectionable features of the architectural portion of the design were much more marked. Mr. Poynter has indeed succeeded in judiciously toning down some of Stevens's rather exaggerated forms, though he has hardly preserved the unity of feeling and conception which pervaded his sketch, and gave the impression of having been a complete inspiration of a moment, while the design exhibited at the Academy seemed rather to be carefully and arbitrarily put

together, though it certainly is a fine conception on the whole. On the lower part of the dome between the ribs are shown "eight thrones or architectural seats," on one of which is shown St. John receiving the inspiration to write to the seven churches, and on the other seven seats the bishops of the seven churches. The connection of this with St. Paul, to whom the cathedral is dedicated, is not very obvious; but the dome was apparently selected as a space for Apocalyptic subjects, and the more directly historical subject of St. Paul would, it is to be presumed, receive its illustration in lower portions of the edifice. The upper spaces between the pilasters are filled up by large circles containing pictorial subjects, the principal one in the exhibited design being by Sir F. Leighton. The whole is intended to be executed in mosaic, if finally approved; but coloured cartoons, the full size, are, it is understood, to be placed *in situ* for inspection and criticism before the execution in mosaic is proceeded with.

The scheme of decoration of which this proposed design for the dome forms a part would be, if carried out in its entirety throughout the cathedral, one of the greatest works ever undertaken; and seeing that it can at the best only be done little by little, probably the commencement of the scheme by decorating the dome is the wisest course which could be taken, as this large space will serve admirably to give an idea of the general effect of the means and of the style employed; and if the remainder of the decorative scheme is never carried out in its completeness, which it very likely may not be, the decoration of the dome in a manner more rich and effective than that employed in other parts of the building will not appear too abnormal or out of place, as there are not a few instances, in churches with a central dome, in which the dome has been made the field for special treatment. It is certainly to be desired that something should come of all the talk which has been made about decorating St. Paul's Cathedral; and it may be hoped that the execution of some mosaic pictures on a great scale in this case will give a stimulus both to the art of design and to architectural decoration in this country. It should be understood, however, that the extent of decoration now contemplated is far beyond anything that could ever have entered into the mind of Sir Christopher Wren himself, whose ideas about the possible decoration of the interior were unquestionably of a much simpler and less ambitious description, and probably, it may be added, not such as would have met the approval of many people in the

present day, when the polychromatic treatment of architecture is so much better understood than it was at the time St. Paul's was built.

Among the public buildings begun or in progress during the year, there is a melancholy significance in the fact that large lunatic asylums form an important item in these. The county of Lancashire, which already possesses one of the largest asylums of this class in England, is being provided with a second establishment on an equally large scale near the neighbourhood of the existing asylum; and we hear of other large buildings of the same class in other counties. The struggle for life in the present day is evidently having its effect in producing a higher proportion of disordered brains among the population, a phenomenon which, like many others, finds its outward expression in architectural work. Another large building of partly the same class, and arising out of the same kind of causes, is the Holloway Sanatorium at Virginia Water, called after the name of the donor, Mr. Holloway. This is a building not intended as a lunatic asylum, in the usual sense, but rather as a place of recuperation for those who are suffering from partial and incipient weakening of mental power from overwork, and who may be saved from worse consequences by rest and change of scene taken in time. There is thus opportunity and excuse for one very important distinction between such a building and the ordinary lunatic asylum. The latter is for confirmed cases, and is supported out of rates and taxes. The first condition seems to many to permit of a degree of plainness and absence of architectural attractiveness in the building, which the second condition renders, on economical grounds, to a certain extent imperative; although we may think that in many lunatic asylums economy in architecture is carried to an injurious extent, and that more cheerful-looking and attractive buildings and grounds would tend towards ameliorating the less serious cases of mental disease. However that may be, the Holloway Sanatorium is on a different footing, having been built out of private funds, and endowed with a considerable revenue by the donor, in order that the establishment may be self-supporting at very low charges to the patients. Accordingly the architect has been at liberty to expend money freely upon elaborate design and rich decoration, intended to render the building in itself a source of interest and attraction to the jaded minds of those who have recourse to it. The main feature in the interior is a grand recreation hall, with a fine and

elaborate open timber roof, and the walls of this and of the entrance hall, corridors, and grand staircase, are decorated with a combination of rich colouring and decoration which, it is observed in the *Builder*, has no equal in this country except in the House of Lords. The whole of the decoration, it is to be remarked, consists of either mouldings or colour decoration, no carving being introduced. So much bad carving is done now-a-days that perhaps the architect may have escaped some pitfalls by avoiding carved decoration, whatever was the reason for this choice. The building is in the Gothic style, but is not a mere copy of any one period, the architect having freely introduced details based on various periods of Gothic, and combined these into one whole. The building altogether is, at present at least, so exceptional in its scale, its objects, and the manner of its foundation that it seems to call for special mention among the buildings of the year. The same class of work seems to be in process of being carried out more often than previously, a very large sanatorium having just been completed at a seaside suburb of Liverpool, and others are in progress elsewhere; though none, as far as we know, on the same scale in size and costliness as the one at Virginia Water.

The largest and most important scheme which has been inaugurated in this country during the year is the Glasgow Municipal Offices, to be erected at a cost of more than 200,000*l.*, and for which Mr. Young's designs have been selected from a number sent in competition. From the published illustration of the selected design it does not appear that anything very new or striking is to be brought out of this splendid architectural opportunity. The design is in a regulation classic style, and not very distinguishable in character from a number of other buildings of the same class in various neighbourhoods: the plan appears to be a good one; and it is probably upon the merits of the plan mainly that the selection has been made. Speaking generally, there is no observable alteration in the tendency of architectural style or fashion during the past year, unless it may be that there are some indications of a slight reaction in favour of Gothic, as against the growing "Queen Anne" tendencies of the day. This was observable in some of the drawings in the architectural room at the Royal Academy this year, a somewhat amusing example being presented by the drawing of the design to which the Council of the Institute of Architects, to the astonishment of many of their own members, awarded one of

their principal prizes this year. The subject was a design for "a West-End Club," and the selected design is a drawing of a building looking somewhat like a mediæval fortress in a bad state of repair. Had the drawing been published in any periodical circulating among the extraprofessional public, it would probably have been believed by most people to be a hoax. It is hardly likely that this taste for "wolfish" Gothic will be revived again, however, but there have been signs of a tendency to make a little stand in favour of Gothic as against the new style. The Junior Conservative Club in Liverpool, for instance (where there has been more building activity than in most places during the year), are erecting a pronouncedly Gothic club-house, not unsuitably for a club professedly conservative: and there were examples of the same tendency in some of the drawings in the architectural room at the Academy, one or two of them designs for imaginary buildings by clever young students, whose choice is more significant than that of older people, who may have been fixed in the Gothic groove by habit and preference. Mr. J. D. Sedding's "Children's Hospital, at Finsbury," in the Academy collection, was another example of most pronounced Gothic; and Mr. Robson has recently built a Board School in London, one of the best of his school buildings (in Oban Street, Tower Hamlets) in which pointed windows with quasi-Gothic details are combined not infelicitously with "Queen Anne" details. It may be observed that no attempt of any consequence seems yet to have been made to substitute the "Free Classic" style for Gothic in churches; the feeling that Gothic is best suited to ecclesiastical edifices having been too deeply planted in the minds both of architects and clergymen, during the ecclesiological revival, to be easily uprooted. Nor is this feeling by any means illogical, for as the modern High Church movement consisted in great measure of a return to some of the mediæval church feelings and practices, it is quite in the natural course of things that this turn of thought should be outwardly illustrated in the church architecture of the day. Still, considering the great (perhaps too great) admiration which has lately been expressed for Wren's architecture, it seems strange that no definite attempt has been made at reproducing the style of interior of his churches, which are certainly practically better suited for modern worship than the mediæval interior. The one classic church on a large scale which has been recently completed is the Roman Church at the Brompton

Oratory; and here, as in the case of the modern mediæval churches of the Establishment, the style was obviously dictated by the sentiment of association and the desire to reproduce the effect of the Basilica churches of Rome. In regard to house-building and street architecture in London, the course of things is much the same as last year. Red brick houses, showing for the most part excellent workmanship and a remarkable similarity of design, continue to spring up about the regions of Hampstead and Kensington and Sloane Street; and occasionally an example showing a little more boldness and originality of treatment surprises us at the corner of a street, as in the case of Mr. Norman Shaw's very effective building at the bottom of St. James's Street, in which, however, it must be admitted that the detail is very much opposed to pure critical taste. There is the same drawback to Mr. Norman Shaw's great block of "mansions" near the Albert Hall, recently completed, the general treatment of which, with its two large recessed arches breaking up the front and giving shadow, is very effective; but here again the interest of the building on a close inspection is marred by the use of details for which nothing can be said except that equally bad ones were used in brick building of the last century. It is a great pity that an artist like Mr. Shaw should be content to bow to fashion in this way. Among the few buildings which may really claim the title of "Free Classic," Mr. Robson's new building for the Institute of Water-Colours, in Piccadilly, deserves special mention. Here there is not mere repetition of eighteenth century details, but a really thoughtful attempt to make some new combinations of classic features, in a manner arising naturally out of the peculiar requirements of the building. It is much to be regretted that there are so very few contemporary specimens of architecture of which this could be said.

Another building to which the same kind of praise may, to a certain extent, be awarded, though it is not so refined in style as that just mentioned, is the new "City of London Schools," on the Thames Embankment. It might be too much to say that this building is, in point of power and picturesqueness, quite worthy of its splendid site; but it represents a certain amount of originality, a combination of some of the refinement and stateliness of Italian architecture with the picturesque variety belonging more properly to Gothic (the details partaking of both styles), and deserves to be chronicled as one of the important and one of the more successful buildings of the year.

A movement has been made during the year for the proper completion of the most remarkable building in England which the classic revival produced, St. George's Hall at Liverpool, the work of a man of real genius and enthusiasm in regard to design, though unfortunately, like many other revival architects, he showed himself sadly indifferent to practical considerations. Elmes died young, before his great work was even finished ; and perhaps it was partly owing to this that it has been left for many years bare of the exterior bas-reliefs with which it was intended to be adorned, and which have remained so many dead panels of uncut stone. The town seems to have at last awakened to the fact that its great building was bare and incomplete, and a competition was advertised of designs for filling the blank spaces, in which both architects and sculptors competed. According to local accounts the result in the first instance seems to have been regarded as unsatisfactory, which may partly be attributed to the fact that the leading sculptors and architects of the day have not had such fortunate experiences of the result of artistic competitions as to be very ready to enter into them. It may be presumed, however, that the matter will not be let drop, and that there is now some chance of the adequate completion of a building which, with all its practical faults, is a landmark in the history of revived classic architecture.

The selection of a design for the new German Parliament House during the past year is too important an event to be passed without notice even in a review dealing chiefly with English affairs. The German Government have worked the architects rather hard and apparently rather ungraciously, for they had a previous competition, open to competitors from all parts of the world, in which our own architect, the late Sir Gilbert Scott, obtained a premium for one of the best and most original designs he ever made. They declined to accept any of the designs, however, and early in the present year advertised a second competition, which was restricted to German architects. No less than 189 competitors sent in designs, and the German architectural critics have expressed themselves as much pleased at the amount of new and previously unknown talent which the competition evoked, and which was regarded as a favourable proof of the progress of architecture in Germany. The successful competitor, Herr Wallot, is a comparatively young man, not hitherto especially distinguished ; which is something in favour of the competition system, with all its drawbacks and abuses. The

design is of course classic (nothing else goes down in modern Germany), and, though somewhat ponderous, has the merit of dignity and monumental character, and is well and practically planned; and probably it will be accepted, when complete, as a building not unworthy of its object, though it certainly has not the picturesque and varied outline of our own much underrated building at Westminster.

Another great competition of the year has been that for the Victor Emanuel monument proposed by the Italian Government, and which has ended in a *fiasco*, the Parliamentary Committee having, to the great indignation of many of the competitors, declined to select any one of the designs for execution, though they have awarded the three premiums offered for the best designs, the first of which has been bestowed on a young French architect, M. Nenot, whose design consisted of a circular *place*, surrounded on half its circumference by a loggia, somewhat after the manner of the Vatican Colonnade, and having a triumphal column in the centre of the circle. The second premiated design, by Signori Ferrari and Piacentini, of Rome, was a remarkable conception in its way, consisting of a tumultuous array of pavilions and staircases, rising over and behind one another to a temple at the top, in front of which was to be placed a colossal statue of the late King; other statues accentuated the composition at other points. The cost of the design would have been enormous, but it certainly showed a bold and poetic imagination.

Meetings have been held during the year with the view of eliciting public interest in, and public support for the continuation of Mr. Wood's excavations on the site of the Temple of Diana at Ephesus, a kind of object on which the Government of this country is painfully indifferent and penurious, in discreditable contrast with that of France, which is always ready to supplement with public funds any researches that will throw light on ancient art and architecture. If we are not awake we may find ourselves cut out in these matters even by the Americans, who have not been generally supposed to be great archæologists; the account of the investigations at Assos, carried on by American explorers, as given in the first report of the Archæological Institute of America, gives evidence of a very enlightened interest in, and activity in regard to the subject of Greek archæology, and a determination to be as thorough and correct as possible, which ought to put archæologists of other nations on their mettle.

Among the architectural publications of the past year, the recently formed Topographical Society of London has brought out in sheets a facsimile republication of Wyngaerde's large view of London, from the Southwark side of the river, the earliest known view of London, drawn in 1550, and now in the Bodleian Museum. This Society is aiming at doing a very good and interesting work in recovering and preserving the representations of old London buildings destroyed or about to be destroyed. Another publication commenced during the past year is that of a large selection of the drawings of the late M. Viollet-le-duc, the energetic and indefatigable French architect who produced both books and drawings in sufficient abundance of each class of work to satisfy most ordinary workers. Many of his drawings are of great interest, and show strikingly his remarkably fine and facile hand as a draughtsman. This is a French publication. The most noteworthy contribution to the literature of architecture in England during the present year has been the beautiful volume got up by the London Architectural Association in memory of the late Mr. Edmund Sharpe, an archæologist specially learned in Gothic architecture. He headed several exploring excursions of the Association, the last one being to the churches of the Charente district, in the south of France; an architectural group well known by repute at least to all architects for the remarkable combinations of Gothic and Byzantine style which are to be found there. The "memorial" consists of a volume containing admirable and most careful illustrations of the buildings visited, forming a very valuable contribution to architectural illustration, highly creditable in every respect to those who worked upon it.

SCIENCE OF THE YEAR 1881–1882.

As year after year passes by, anyone undertaking to keep only a very limited record of scientific discovery and invention finds the task surrounded with increasing difficulty; not so much from the mass of material which presents itself, as owing to the difficulty of selection necessary to compress the accounts of the most interesting and more readily intelligible novelties within the modest limits placed at his disposal. In the present instance the

number and importance of the subjects of scientific interest is no less than in former years, though many discoveries of the greatest value to the progress of science are omitted from their not possessing sufficient interest for the general reader.

Great as have been the scientific results of the year, the loss which science has to deplore by the death of some of her most eminent votaries invests it with melancholy distinction. At the head of these must stand the name of Charles Darwin, whose work—the "Origin of Species"—may well be said to have initiated a revolution in natural knowledge. Shortly after Mr. Darwin had passed away, we were startled by the announcement of the death of Professor Balfour, the young and brilliant Professor of Morphology at the University of Cambridge, who lost his life by an accident in the Alps. The name of another biologist, Sir Wyville Thomson, the scientific chief of the "Challenger" expedition, must also be added to the obituary of the year. And abroad the deaths are announced of Schwann, the mycologist of Liège, and Decaisne, the botanist of the Jardin des Plantes at Paris. Astronomy had to mourn the loss of Dr. Robinson, at Armagh, and of Professor Plantamour, at Geneva, and Von Burg, the mathematician and physicist, died at Vienna. Ami-Boué and Binney are names which death has erased from the roll of geologists. Besides those we have lost Sir R. Christie, Professor of Materia Medica at the University of Edinburgh; W. Stanley Jevons, Professor of Political Economy at University College, London; and Wöhler, the chemist, the discoverer of aluminium.

Astronomy.

Up to even a recent period astronomers had only one instrument—the telescope in its various forms—which they could apply in the investigation of the phenomena of the heavenly bodies. Now, with the spectroscope at their disposal, they are able to inquire into the constitution of these bodies, and to throw light on the nature of the substances which exist and move in interplanetary space. The application of photography to spectrum analysis increases very largely the value of the spectroscope as an astronomical instrument, and the labours of astronomers in this direction have, during the past year, been not less fruitful than in previous years. Solar physics, the researches in which depend almost entirely on this instrument, has become of late years one of the most important branches of

astronomical inquiry, if not already raised almost to the dignity of a separate section of science.

One great difficulty in solar spectroscopy is to distinguish between what really belongs to the sun, and what originates either in the earth's atmosphere or in the space which separates us from the spectral light. Both in Europe and America, observers have endeavoured to eliminate atmospheric influence by availing themselves of observations from points as far as possible above the sea-level, and at a time of year when the solar rays have a minimum extent of air to pass through. Last midsummer Captain Abney, from a station on the Riffelberg, 8,500 feet above the level of the sea, found the spectrum of the sun to be essentially the same as in London, but he was able to satisfy himself that the absorption of light due to aqueous vapour was much less than at the lower levels. Curiously enough he at the same time observed a great intensity of the lines of the spectrum which indicate the presence of alcohol, leading to the conclusion that the spirit must exist in the solar atmosphere itself. These valuable results are confirmed by Professor Langley of Pittsburg by means of his observations in the rare and pure atmosphere of Pike's Peak, in Nevada, at an elevation of 13,000 feet. The spectroscope, in the short period since its invention, has done wonders in increasing our knowledge of the sun, and our investigators on both sides of the Atlantic are evidently so fully alive to the difficulties which beset their inquiries, that we cannot but be hopeful that in the near future they will be able to overcome them.

Comets.—In the article on the "Science for the Year 1880-1881" in the last issue of the "Companion," the discovery of four comets whose return was not expected in 1881 had been recorded. Subsequently to the Almanac's going to press two more were detected. The first of these was found, on the 4th October, 1881, by Mr. Denning, of Bristol, the well known observer of meteoric showers. At the time when it was first seen it was already receding, both from the sun and from the earth, and its having escaped earlier discovery can only be attributed to the general prevalence of cloudy skies during the month of September. It was also observed by M. Coggia at Marseilles, and by Dr. Copeland and Mr. Lohse, at Dunecht, on the nights of October 9, 10, and 12, and the calculation of its elements from these observations seemed to show that its orbit resembled that of the fourth comet of 1819, detected by Blanpain of Marseilles.

Corrected calculations, however, gave the period of Denning's comet as nearly nine years, whereas that of Blanpain's comet was not quite five years; if, therefore, the two are identical, the orbit and period must have undergone remarkable changes since 1819, and the question cannot be definitely settled until the perturbations arising from the action of the planet Jupiter have been investigated.

Another comet in 1881 was discovered, on November 16, by Mr. Lewis Swift, at the observatory of Rochester, near New York, and its orbit, as calculated from the observations of Herr Palisa, at Pola, showed some resemblance to that of the first comet of 1792, discovered by Miss Caroline Herschel; the differences in the elements, however, could only be accounted for by great perturbation in the interval, and it is probable that the two comets are distinct. With Encke's comet, therefore, whose return was expected, and which was actually detected on August 27, the total number of comets observed in 1881 amounted to seven—considerably more than the average in any one year.

In the present year the first comet was discovered by Mr. Wells, at Boston, in the United States of America, on March 18, and was soon afterwards observed by all the astronomers in both continents. When first seen it was rapidly approaching the earth, and the calculated orbit, as well as the other circumstances of its appearance, led to the expectation that it would become very bright. As a matter of fact, however, it never became a conspicuous object in the heavens, and was only seen with the naked eye by practised observers who knew accurately where to look for it. On June 10 this comet was in perihelion (being then only five millions of miles distant from the solar surface); a bright comet, which must be the same body, is reported from the southern hemisphere, having been detected at Maritzburg, in Natal, on June 5. The circumstance that this comet did not increase in brightness in the ratio which was predicted for it, has tended to invest its constitution with some mystery, especially as its examination under the spectroscope shows it to vary much in character from the similar members of the solar system which have appeared since the instrument was applied to the study of the heavenly bodies. So early as the middle of May, the spectrum of the comet had been carefully observed at Greenwich, and subsequently at the Temple Observatory, Rugby, and at Lord Crawford's Observatory at Dunecht: on May 31, Dr. Huggins, at Tulse Hill, obtained a photograph of the spectrum. On the

continent the results of the spectroscopic examination of the comet were also reported by Dr. Hasselberg, of Pulkowa; Professor Tacchini, at Rome; and Dr. Vogel, at Berlin. All these observations agreed generally in showing that the nucleus gave a very bright and extended continuous spectrum with an excessively strong yellow line, of which the micrometrical measures proved the perfect identity with the yellow line of sodium, the D line of the solar spectrum; there was no trace of the three ordinary bands observed in the spectrum of other comets. As these results are altogether new in cometary spectroscopy, the knowledge of them has tended to increase the uncertainty as to the constitution of the comet already raised by its failure to become so bright as was expected from the early observations.

At the moment of totality during the solar eclipse of May 17, the observers of that event, who were stationed in Egypt, discovered a fine bright comet in close proximity of the sun; it was readily seen with the naked eye, and was well reproduced on the photograph of the eclipse taken at the time. Probably this comet moves in a highly inclined orbit, and had approached the sun from the southern hemisphere without being observed, otherwise it is difficult to understand how such a visitor could have escaped detection by the numerous and active observers in Europe and North America. Its position with regard to the sun is determined from the photographs, but owing to the very brief interval during which it was visible, nothing could be ascertained of the direction or rate of its motion. So far as can be learned, no one has seen the interesting stranger since the eclipse.

A circular issued in the middle of September, from Lord Lindsay's Observatory at Dunecht, announced the discovery, on the 11th of that month, by M. Cruls at Rio de Janeiro, of a comet visible to the naked eye, thought by the discoverer to be Pons' comet of 1812, whose return was expected next year. It subsequently appeared that M. Cruls' comet had been previously seen on September 8, by Mr. Finlay, Senior Assistant at the Government Observatory at the Cape of Good Hope, and on September 17, it was also observed already as a magnificent object, by Mr. Ainslie, at Ealing Common. A few days after it was seen with the naked eye in full daylight by many persons at different places in the South of Europe. In our more northern latitudes we have not been so fortunate; the comet was already at the time of its discovery close to the sun, and has, in England, only been visible for a short time before sunrise, on

clear nights which are at this season of the year rare in this country. Those who have been able to observe it speak with great admiration of this interesting visitor to our solar system, describing it as the most brilliant cometary body which has been seen in the present century. Its spectrum, as observed by MM. Thollon and Gouy, of the Nice Observatory, presents much similarity to that of Wells' comet, especially in rendering the sodium bands, which, as already explained, had never been shown in the spectrum of any other comet. Cruls' comet came to perihelion on September 17, and the latest computation of its elements seems to render probable its identity with the comet of 1843 and the comet of 1880; if this be correct we may see the comet back again in a few months, when it will be so near the sun as to make possible its absorption by the great central luminary.

Another smaller comet was discovered on September 10, by Mr. Barnard, at Nashville, in Tennessee; he describes it as being of the tenth magnitude, circular in shape, and about 2′ in diameter, with central condensation. The same comet was observed at Harvard College on September 14, at Königsberg on September 18, and at Vienna on September 21.

Minor Planets.—During the year 1881 only one of these small members of our solar system was added to the list of those already known, and their number thus brought up to 220. In the present year more activity in this direction has been developed; in the early part of the year six new planetoids were discovered, all by Dr. J. Palisa at Vienna, to the Observatory of which place he has now removed from Pola: the first of these, No. 221, he found on January 18; No. 222, on February 9; No. 223, on March 9; No. 224, on March 30; No. 225, on April 19; No. 226, on July 19. After this the turn for discovery fell to another astronomer; No. 227 was picked up by M. Paul Henry at the Paris Observatory on August 12. The discovery of Nos. 228 and 229 is again due to Dr. Palisa, the first on August 19, the other three days afterwards. On September 3 Dr. De Ball discovered No. 230 at Bothkamp, and on the 10th of the same month Herr Palisa detected another of these tiny bodies, which is therefore No. 231. Up to the present Dr. Palisa is credited with the discovery of no less than thirty-eight of these minute planets; he has now given names to those which he observed in 1879 and 1880. Their numbers, dates, and names are:—No. 205, October 13, 1879, *Martha;* 207, October 17, 1879, *Hedda;* 208, October 21, 1879, *Lacrimosa;*

210, November 12, 1879, *Isabella;* 212, February 6, 1880, *Medæa;* 216, April 10, 1880, *Cleopatra;* 218, September 4, 1880, *Bianca;* 219, September 30, 1880, *Thusnelda.*

The supplement to the "Berliner Astronomisches Jahrbuch" for 1883 contains the approximate position for every twentieth day of the year of 217 of the 220 minor planets which had been observed up to the end of 1881. From an interesting research by Herr Hornstein, it appears probable that all the largest of the minor planets have now been discovered, and that of those having a diameter exceeding 25 geographical miles the number is exceedingly small. It seems that the number of asteroids which have been already discovered having a diameter of less than 5 miles is also very small, especially in that portion of the minor planet zone nearest to Mars. In the outer zone nearest to Jupiter there may be a more considerable number of these minute bodies, probably too faint to be observed by the telescopes ordinarily employed in the search of these heavenly bodies. Omitting the few of comparatively large magnitude, the general average diameter of the remaining members of the group appears to be between 5 and 15 miles—a much smaller diameter than has hitherto been assumed.

The Planet Mars.—During the opposition of the planet Mars, in 1877–1878, Signor Schiaparelli, of Milan, had observed on the planet's surface, intersecting the so-called continents, a number of narrow dark streaks which, from their aspect, have been called "canals," though many of them are in reality as broad as our Red Sea. Similar lines have been previously seen by different observers, and as has been pointed out by Dr. Terby, of Louvain, have been represented from time to time in their drawings of the planet. From the great variations in these representations, it was supposed that the markings indicated no phenomena of a fixed and permanent character. At the succeeding opposition, however, in 1879–1880, Schiaparelli recovered all but one of the streaks he had previously seen, and marked them on a map which he then laid down. In the beginning of the present year he again traced the whole of them, and found twenty of the number doubled by parallel dark lines at a greater or less distance, covering the whole of the equatorial regions of the planet with a gigantic network. No satisfactory explanation of these phenomena has been given, but they seem to show that the circumstances of the planet cannot, as has been supposed by some astronomers, be analogous to those of our earth.

Eclipse of the Sun.—A solar eclipse during its period of totality offers special advantages for the study of the sun's constitution, and is therefore a phenomenon of the most marked interest to physical astronomers. When the light of the bright interior nucleus of the sun, which we usually see, is prevented from illuminating our upper air by the interposition of the dark moon, the sun's atmosphere, which is never seen except at such times, is fully revealed. Unfortunately, the period of an eclipse during which this phenomenon can be observed, is excessively short, and the total phase of the sun's obscuration is only observable along a line on the earth's surface, of which the different points are in most cases entirely inaccessible. This time of totality in the eclipse of May 17, 1882, could be drawn on the globe from the West Coast of Africa through Egypt, Persia, Central Asia, and China, and for any point on this line the moon could be seen as entirely covering the sun. Astronomers therefore who desired to observe the total eclipse, were compelled to select some point of observation lying on this line. The place thus chosen by the observing parties from Europe, is on the Nile, about 100 miles north of Thebes, in latitude 26° 32′ N.; not that that station was quite the best—for the reason that the duration of totality was there only 72 seconds, while at Teheran the moon entirely covered the sun for a period of 104 seconds—but that it offered the advantage of greater accessibility. In the short space of $1\frac{1}{5}$ minute, all the work had to be done, all the results of months of previous preparation depended on the observations which could be taken in that comparatively infinitesimal period.

A spot near Sohag, on the Nile, in latitude 26° 31′ N., and longitude 31° 37′ E., was the place of observation finally pitched upon, and there the members of all three expeditions assembled. The English expedition, consisting of Mr. Norman Lockyer and Dr. Schuster, and their assistants, was sent from this country at the suggestion of the Solar Physics Committee of the Science and Art Department, and was organised by the Royal Society. The French expedition owed its existence to the munificence of M. Bischoffsheim, the banker of Paris, and consisted of MM. Thollon, Trepied, and Buisseux; the Italian expedition was under the direction of Professor Tacchini, of Rome. One of the principal objects which the English observers kept steadily in view was to correlate the phenomena which were noticed on this occasion with those which presented themselves at previous

eclipses. In the result it seems to have been clear that in its general details the present eclipse resembled largely the one observed in India in 1871, while it differed considerably from that whose features were recorded by the American astronomers in 1878. Considerable stress is laid on this circumstance from the fact that in 1871 the atmosphere appears to have been as in this year in a state of great agitation, as judged by the frequent appearance of spots on the surface and prominences on the limbs of the sun, whereas in 1878 its condition seems to have been one of remarkable quiescence.

The Conservation of Solar Energy.—At the meeting of the Royal Society on March 2 last, Dr. C. W. Siemens read a most interesting paper on his theory regarding the mode of maintenance of the solar energy. It is known that the sun is constantly radiating into space an amount of heat equivalent to that which would be provided by the perfect combustion every thirty-six hours of a mass of best coal equal to the earth in bulk. Of this enormous quantity of heat it is calculated that only one part in 225,000,000 is intercepted by the planetary bodies; the remainder is radiated into space, and to all appearance does no work. The mode in which this great loss can be sustained, without producing an observable diminution of solar temperature—how, in fact, the stupendous supply of fuel necessary to maintain that temperature is kept up—has been in all ages a question of much interest, though it is only in modern times that any scientific solution could be suggested. The ordinary hypothesis of chemical action is met by the objection that the accumulation of the products of combustion on the sun's surface would in a comparatively short time prevent the continuation of that action. Against Sir W. Thomson's idea that the heat is generated by a continual rain of meteorites, impinging on the sun's body with immense force in consequence of the velocity they have acquired from his attraction, it is opposed that this constant supply of material would produce a progressive increase in his bulk, which would be equally subversive of planetary equilibrium. Helmholtz, with many other physicists, supposes that the radiant energy of the sun is the result of a gradual shrinkage of his bulk and condensation of his substance. But to this it is answered that the heat so produced would be liberated throughout the sun's mass, and we know of no material of sufficient conductivity to transmit anything approaching the amount of heat lost by radiation. On this supposition of Helmholtz also there would evidently be a limit

imposed on the solar activity, since a time would come when the limit of consolidation would be reached.

According to Dr. Siemens' theory, stated very briefly and concisely, the sun acts as a huge fan, drawing in towards his polar regions enormous quantities of hydrogen, hydrocarbons, and oxygen, which, as he suggests, are distributed in an immensely attenuated condition throughout the whole of space. During their approach these gases would pass from their state of extreme attenuation and of extreme cold to that of compression, accompanied with rise of temperature, until on reaching the photosphere they would burst into flame, giving rise to great development of heat. The result of their combustion is aqueous vapour and carbonic acid or carbonic oxide, according to the sufficiency or insufficiency of oxygen present to complete the combustion, and these products of combustion, yielding to the influence of centrifugal force, will flow towards the solar equator, from whence, owing to the great tangential velocity of the equatorial region, caused by the rotation of the sun on his axis, they will be again projected into space. Here they would be again dissociated, for, according to the law of dissociation as developed by Bunsen and Saint-Claire Deville, the point of dissociation of different compounds depends both on temperature and pressure, so that it is quite conceivable that when aqueous vapour is reduced to extreme tenuity its dissociation may be effected by solar radiation at a comparatively low temperature. Space, on this supposition, would in reality be filled with hydrogen, oxygen, and nitrogen, and the hydrocarbons, in a condition of infinite tenuity, and the radiant energy of the sun, which is seemingly running to waste, would, as Dr. Siemens suggests, in reality be doing work in dissociating the aqueous vapour and carbonic acid as they flow into space. These gases, the hydrogen, oxygen, nitrogen, and hydrocarbons, would then be again drawn in to the polar regions of the sun by his fan-like action, to go continually the same round as above described. Further, as the author supposes, the sun in his motion through space, would continually come into contact with and take up fresh supplies of the gaseous material.

Such a bold hypothesis as the one thus propounded by Dr. Siemens by no means meets with general acceptance; it must depend on further discoveries in solar physics to give confirmation to his views. Already objections are raised by those in a position of authority, who are able to reason on grounds which are universally accepted. It is maintained that the force of

gravitation on the sun's surface is so large as to be incapable of being overcome by the centrifugal force at his equator, notwithstanding the high velocity of rotation. Again, though Dr. Draper and Dr. Young have detected by the spectroscope oxygen in the solar atmosphere, there are many observers in this country who doubt the accuracy of their observations. It is also pointed out that the intense heat of the solar atmosphere is probably a more effective cause of the dissociation of the elements at the surface of our luminary than the absence of pressure in the regions of space. Whatever the result may be, however, the highly ingenious theory of Dr. Siemens will remain on record as an important addition to the materials for the discussion of what Sterry Hunt calls the Physiology of the Universe.

The Tidal Evolution of the Moon.—Mr. G. H. Darwin has been engaged in a series of very delicate observations with a pendulum of peculiar construction which he has erected at the Cavendish Laboratory, at Cambridge, on the lunar disturbance of gravity. The results he has obtained seem to indicate that the friction of the tides is gradually lengthening the terrestrial day, and that the moon is getting further and further from us. Thus in the distant future both the day and the month will become longer; but the day will lengthen faster than the month, so that ultimately their duration will be the same. Then the earth will evidently always turn the same face to the moon, as the moon now always turns the same face to the earth. Now, since both day and month are now lengthening, in olden time they must have been shorter than they are now; in fact, some 50,000,000 years ago, as Darwin reasons, the moon must have been whirled round the earth in from two to four hours, this being also the time occupied in one diurnal rotation; in other words, at that time the month and the day were both between two and four hours long. This supposition would harmonise with that according to which, more than 50,000,000 years ago, the moon had its origin in a rupture of the earth. As a remarkable illustration of a portion of this theory, it may be noted that the recently discovered inner satellite of Mars revolves round that planet in rather more than 7½ hours, while Mars himself takes nearly four times as long to complete one revolution.

Geography.

Africa.—The various missionary and trading parties in the interior of the great continent seem now to be principally

engaged in establishing themselves firmly in their several stations, and in improving their means of communication between each other and the coast. Of exploring expeditions on a large scale none have recently started, though single travellers have worked out in many places the geography of regions whose general outlines were only previously known. Three energetic observers, Mr. J. T. Last, of the Church Missionary Society, Rev. Chauncy Maples, and Mr. H. E. O'Neill, Consul at Mozambique, have been exploring portions of the country between the Lakes Tanganyika and Nyassa and the eastern coast, and their discoveries have greatly helped to fill up the blanks in our maps of that part of Africa. Mr. Last, starting from the Missionary station at Mamboia, explored the Nguru country, and has produced a map of this hitherto unknown region. He left Mamboia, which lies on the direct road from Bagamoyo into the interior, on the 19th October, 1881, and returned there by way of Kinyumbi, the French Roman Catholic Mission station on the River Luseru, after about three weeks tour among the Masai tribe on the Luiji river. Further south Mr. Maples, in the month of June, 1881, travelled through Makua Land, between the rivers Rovuma and Luli, opposite the coast on the Mozambique Channel, but he found nothing in the general character of this country to recommend it either to the hunter, the settler, or the trader. In the autumn of last year Mr. O'Neill made a journey of 600 miles into the interior, along the route formerly adopted by the Arab traders from the coast at Mozambique to the eastern shore of Lake Nyassa, which is considerably shorter than that followed by Livingstone, Bishop Steere, and other English travellers by way of the Rovuma. At Shalawe, some 150 miles inland, he heard of the snow mountain Namuli, confirming information obtained by Mr. Maples from quite independent sources. When at the extreme eastern point of his journey, this peak was pointed out to him, though the range of mountains of which it formed a part, and which probably constitutes the watershed between the rivers feeding the Kilwa lake and its outlet the Lujende and those of the Mozambique coast was so enveloped in cloud and mist that he could not clearly distinguish it. The existence of this mountain, which, if it be really covered with perpetual snow, must be at least 16,000 feet high, remains for the present a mystery. With regard to the Lujende river, the Rev. W. P. Johnson, of the Livingstonian Mission, has traced this stream to its source in a lake, but

whether this lake is the same as Lake Shirwa of Livingstone is not settled.

For some years back various reports of the existence of coal-fields on the Upper Rovuma reached the coast; Dr. Livingstone himself had found fragments of this coal, and other samples found their way to Zanzibar. The Sultan of Zanzibar, naturally interested in this possible source of wealth, some time ago sent an Arab and a Parsee engineer to examine into the matter, both of whom returned with glowing accounts of the great abundance of the mineral and of the ease with which it could be quarried or mined. Before making actual preparations, however, to win this coal, the Sultan was advised to have the place where it was said to occur examined by a qualified geologist, and accordingly Mr. Joseph Thomson, whose successful expedition to Lake Tanganyika, under the auspices of the Royal Geographical Society, was recorded in the "Companion" for 1881, was commissioned in the summer of last year to proceed to the spot. On reaching Itule, on the Lujende, a short distance above its junction with the Rovuma, Mr. Thomson came upon the so-called coal-beds, but he found them to consist of a few irregular layers of bituminous shale, which could not be made to burn alone, accompanied by lumps of a curious substance like anthracite, which could be set on fire only with great difficulty and left more than 50 per cent. of ash. This product, of course, had no commercial value whatever. Mr. Thomson's expedition, however, though disappointing as regards its immediate object, has had valuable results in the important series of geographical and geological observations, which he was able to carry out in the country through which he passed. Another traveller, Mr. Beardall, has also been employed by the Sultan of Zanzibar to explore the course of the Rufigi river in the more northerly part of the East Coast of Africa, where he has obtained good geographical results.

Two enterprising travellers are engaged in exploring that part of the African continent which lies between the Victoria Nyanza lake and Abyssinia. Mr. Schuver is directing his operations in the north-western part of this area, in the neighbourhood of the upper water of the Sobat river. From Fadassi he has made two excursions into the Galla district, and by the latest account from Agoldi, bearing date January 6 of this year, he is preparing for a longer journey. Dr. Strecker, the companion of Dr. Gerhard Rohlfs in his adventurous journey from Tripoli towards the

Wadai oasis,* has been doing important work in the basin of Lake Tsana, and is planning a journey across the region southward, towards the Jub. By the efforts of those gentlemen we may hope to see filled up the map of those regions which at present is nearly blank.

In last year's "Companion," some account was given of Dr. Junker's expedition in Central Africa, west of the Albert Nyanza lake. Letters of December 25, 1881, describe him as still exploring the Niam-Niam country, and as having passed beyond the River Welle of Schweinfurth, his object evidently being to trace the course of the river, and ascertain whether, as geographers generally suppose, it is a tributary of the Congo.

As regards this great western river of the continent, not much advance has been made in its exploration during the past twelve-month; two missionary parties have succeeded in reaching Stanley Pool, travelling one by the north bank and the other by the south, but no progress has been made further eastward than this point. Some more stations have been established, but the mission has sustained a severe loss in the death of Mr. McCall, of whose successful explorations an account was given in last year's "Companion." Mr. Stanley himself has been up to the stretch of the river named after him, and is gradually pushing on his trading stations further in the same direction. M. Savorgnan de Brazza, having obtained from the native chief Makoko the cession of the land surrounding the station, which he calls Brazzaville, on the southern bank of Stanley Pool, has taken possession of the territory in the name of France, and a guard is maintained there to protect the French flag which is kept flying. One consequence of this rather high-handed proceeding is that persons of other nationalities are prohibited from settling on the south side of the pool.

While these sheets are in the press Mr. H. M. Stanley has returned to Europe, after his three years' labours on the Congo. He has succeeded in constructing a practicable road past the cataracts of the great river as far as Stanley Pool, and has established a chain of stations for the promotion of commerce and civilisation along the most difficult part of the stream.

The Arctic Regions.—In the last volume of the "Companion" it was stated that Mr. Leigh Smith had again started with his steam yacht *Eira*, on a second exploration of the coast of

* See the "Companion" for 1880, p. 195.

Franz-Josef Land. Mr. Smith sailed from Peterhead, in June, 1881, with the intention of spending the summer in the polar regions; when, therefore, the autumn passed away without any tidings, great fears were entertained of the safety of his ship and her crew. As his intention was to return to England before the end of the year, the *Eira* was not provisioned for a second winter, and if the ship were caught in the ice, and unable to break out during the summer of 1882, it was felt that her situation would be most precarious. Under these circumstances the relatives and friends of Mr. Leigh Smith determined to send out an expedition in search of the intrepid explorer, if possible to find and rescue him, or at all events to leave stores of provisions, coats, and other necessaries in places where in the event of their having been compelled to take to their boats, the adventurers might discover and avail themselves of them. On application to the Admiralty the Government consented to make a grant of 5,000*l.* in aid of the relief expedition, and a sum of 1,000*l.* was promised by the Royal Geographical Society. A steam whaler, the *Hope*, of Peterhead, was hired for the service, and together with a crew of four officers and thirty-two men was placed under the command of Sir Allen Young, who in 1880 had distinguished himself in his cruise with the *Pandora* in the attempts to reach the Pole by way of Smith's Sound. Requests were also made to the members of the Dutch Polar Expedition, in the *Willem Barentz*, which has this year made her fifth annual voyage to the Arctic regions, and to Captain Palander, who at the head of a Swedish expedition was expected to be at Mussel Bay, in July, to keep a careful look-out for the missing party. Sir Henry Gore Booth also, accompanied by Mr. Grant, sailed for the same regions, in the 75-ton yacht *Kara* on a cruise of partly a sporting and partly a scientific and artistic character, and his intention was to co-operate in any measures for the relief of the *Eira* and her crew. The *Hope* left Gravesend, on June 22nd of this year, and when he reached Hammerfest, Sir A. Young increased his resources by the purchase of a walrus-hunter's schooner; this vessel he despatched to cruise on the west cost of Novaya Zemlya, while he himself, in his own ship, proceeded in the direction of Franz-Josef Land.

At length the welcome tidings of the safety of the members of the *Eira* expedition reached this country; on August 20 the *Hope* arrived at Aberdeen, having on board Mr. Leigh Smith

and all his companions. From Sir Allen Young's report it appears that after searching for some time on the coast of Novaya Zemlya, the *Hope* was in the act of leaving Altglaubigen Bay, Matotchkin Straits, for Franz-Josef Land, when she was stopped by signals from the *Willem Barentz* in the offing. Soon afterwards a boat arrived with Mr. Leigh Smith, who reported that his men were encamped in the bay, on the other side of an intervening point. The *Eira*, as they stated, had been severely nipped by the ice close to Cape Flora, on August 21, 1881, and sank in deep water two hours afterwards, before the crew could rescue sufficient provisions to carry them through the winter. Happily sufficient walrus- and bear-meat was obtained, not only to prevent them from dying of hunger, but to pass the dreary months of the winter in health and comparative comfort. So soon as open water appeared on the coast they took to their boats, and towards the end of June, 1882, succeeded in leaving Franz-Josef Land and in reaching Novaya Zemlya, where they providentially fell in with the expedition sent to their relief.

On December 20, 1881, news was unexpectedly received in London, by telegraph, of the arrival of a portion of the long missing American ship *Jeanette* at the mouth of the Lena, in Northern Siberia. It will be recollected that this ill-fated steamer was fitted out in 1879 by Mr. Gordon Bennett, and sent on an expedition to the Arctic Sea through Behring's Straits. Since August of that year no tidings had been received of this ship, although several other vessels were sent in search of her. At last, after two years and a half of suspense, a telegram was received from Mr. Melville, chief engineer of the *Jeanette*, according to which the ship was crushed by the ice on June 23, 1881, in latitude 77° and E. longitude 157°, after having drifted for twenty-two months in the tremendous pack ice of the Arctic Ocean; the crew succeeded in escaping from the ship in three boats, two of which arrived at the mouth of the Lena, but the third has not since been heard of. The party in Melville's boat, including Lieutenant Darenhauer and Professor Newcombe, landed on the east side of the river, and were able to reach Yakutsk: from this place, with the assistance of the Russian officers of the settlement, they returned to the desolate delta at the mouth of the Lena, where the crew of the second boat, with Lieutenant De Long, the commander of the expedition, and Dr. Ambler, the surgeon, had effected a landing. Sad to relate, these

unfortunate men were unable to reach the inhabited districts, and perished miserably of hunger and exposure. Thus out of the whole crew of the *Jeanette* of thirty-two men, only fourteen survived to reach their native land.

International Polar Meteorological Observations.—At an International Conference held at St. Petersburg in August, 1881, the project of establishing observing stations for the purpose of carrying on series of simultaneous and comparative meteorological and magnetic observations was discussed and approved. According to the arrangement there adopted it was determined that these several stations should be settled and maintained at the expense of the various countries who supported the proposal. Two expeditions were already last year sent out under Lieutenant A. W. Greeley and Lieutenant P. H. Ray by the United States of America, the stations they respectively occupied being at Lady Franklin Bay and at Point Barrow. Of the two Russian stations, one is at the mouth of the Lena, and was occupied in August last by an expedition which proceeded there overland from St. Petersburg, under Lieutenant Jürgens of the Imperial Russian Pilot Service; the other is on the coast of Novaya Zemlya, and is directed by Lieutenant Andreief. The Danish expedition is commanded by Mr. A. Paulsen, and started in May for Godshaab, on the west coast of Greenland, which it is expected will be a station specially well adapted for the observations of aurora borealis. From the Netherlands an expedition under Dr. Snellen, of the Utrecht Meteorological Observatory, has sailed for Dicksonshavn, at the mouth of the River Yenisei. The Swedish party consists principally of Arctic veterans who have served in the *Vega* and *Polhem* expeditions; it is commanded by Mr. N. Ekhohm, and is to occupy a station at Mussel Bay, a small inlet on the northern coast of West Spitzbergen, where the expedition under Nordenskiöld and Palander wintered in 1872–3. Austria sends a party of fourteen persons, headed by Lieutenant Emil von Wohlgemuth, of the Imperial Royal Navy, in the steamer *Pola*, to a spot on the Island of Jan Mayen; and Germany has decided to erect an observing station at Cumberland Sound, on Davies' Strait, of which Dr. Giese will have charge. The Germans also have arranged to establish a similar station in the Antarctic zone, and have selected one of the islands of South Georgia for that purpose, and have placed the expedition to that place under the leadership of Dr. Schrader, of the Hamburg Marine Observatory. It is to be

expected that these expeditions will not only have important influence on the condition of our knowledge of atmospheric and magnetic phenomena, but will also contribute largely to the progress of geographical science.

Asia.—In last year's "Companion," a short account was given of Messrs. Soltau and Stevenson's journey from Bhâmo, in Eastern Burmah, to the province of Yünnan in China. Mr. A. R. Colquhoun, of the Indian Public Works Department, accompanied by Mr. C. Wahab, has recently performed the return journey, at least that portion of it that lies between Tali-fu and Bhâmo. These gentlemen left Canton on February 5 of this year, and explored the whole of the Si-Kiang, or as it is generally called, the Canton river, as far as Wu-chow, where it ceases to be navigable. Leaving the main river at this point, they were able to penetrate still further by the Yü, a tributary of the Si-Kiang, to the large and important town of Nan-king, which they reached on February 27. From this place they traversed the whole of the southern portion of Yünnan, a country previously very little known, with the intention of making their way to Zimmay, and then exploring the road from that place to Rangoon, which has always been considered, if feasible, to be the best route between British Burmah and the western provinces of China. On their arrival, however, at Shu-mao or Esmok, towards the end of April, a reverse awaited the expedition; the local Mandarin threw difficulties in their way, and forced them, instead of proceeding by the southern route through the Laos country, to strike northwards by an unfrequented path to Tali-fu, along the valley of the Papien river. The whole of this region, along with the portion of Yünnan west of Tali, had been before and during the late rebellion a stronghold of Mahomedanism, and in the remains of the richly decorated temples and houses, and in the numerous fine ruined villages, showed evidences of former prosperity and affluence. Mr. Colquhoun has carefully surveyed the route some 2,000 miles as far as Tali, and has prepared an excellent map of the whole of southern Yünnan, and a chart of the upper reaches of the Canton river, along a line of way of great importance, hitherto untrodden by any European. The explorers left Tali-fu at the end of May, and pursued their way to Bhâmo, which they reached on July 14, by the known road pursued by Margary, M'Carthy, Gill, and last year by Soltau and Stevenson. From the obstacles placed in their way, however, by the Mandarins, who use every exertion to prevent the trade

routes of these countries from being opened up, and partly owing to heavy rains and the consequent swollen condition of the rivers, this, the last portion of the explorers' journey, although better known, presented greater difficulties even than the first.

Unfortunately, as in the case of nearly all the more important expeditions undertaken in the cause of geographical science, this one of Mr. Colquhoun has also demanded its victim; Mr. Wahab never rallied from the exhaustion consequent on the privation and fatigue of the latter portion of the journey. Already seriously ill on his arrival at Rangoon, he was forwarded with great care to Calcutta, where he received the best medical aid and attention at the General Hospital, and rallied so far as to be able to be sent to England. But his constitution had been too far tried to hold out any hopes of recovery; he died on board the steamer in the Red Sea while on his way home.

Ever since the occupation by the Russians of the Khanates in Central Asia, what was generally supposed to be the city of Merv, has been the object of great interest and conjecture, since it would form one of the principal stations on the direct route between Bokhara and Afghanistan. For nearly thirty years Merv has not been visited by an Englishman, and its condition, population, and means of defence have been for some time wrapped in considerable mystery. It was generally held that Merv was a great Asiatic city, the possession of which could make the fortune of the possessor at the present time, and it was not until Mr. O'Donovan, the Special Correspondent of the *Daily News*, succeeded by dint of great personal energy, ingenuity, and boldness in reaching this supposed strategic centre, that the delusion was dispelled. Mr. O'Donovan had been attached as newspaper correspondent to the Russian Expedition under General Skobeleff, which subsequently defeated the Tekke-Turkomans at Geok Tepé. When the Russians desired to maintain in secrecy the plans they had formed for an advance into the Turkoman districts, he was compelled to return to Kelat-i-Nadir in Persian territory. Here also he was forbidden to proceed further eastward, but eluding the vigilance of the authorities, he managed to reach Méhna, where there was an outlying colony of Tekke-Turkomans from Merv. With these people he executed a forced ride of 120 miles over a country destitute of water, and reached Merv in the marvellously short time of twenty hours. According to this intrepid traveller there is no such city as

Merv; Merv is only a geographical expression for a certain amount of cultivated territory occupied by about half a million of Tekke-Turkomans. When previously visited by Englishmen, the oasis was under the jurisdiction of Khiva, and its administrative centre was at Porsa Kala, now a heap of mud ruins, though the last of three ruined cities which successively have been built and destroyed in this country. The present central point of the Merv territory, which has only during the last twenty-six years been occupied by Tekke-Turkomans, is now Koushid Khan Kala, a fort at the bend of the River Murghab, surrounded by about a thousand beehive-shaped mud huts, where the present inhabitants hope to be able to make a stand against the Russian invasion when it is renewed. At first O'Donovan was taken for a Russian, and under this impression detained a prisoner for more than a month, but on the receipt of an assurance from the Minister at Teheran that he did not belong to their enemies, the Turkomans set him at liberty. More than that, as the English troops were at this time at Kandahar, and were firmly believed to be advancing on Herat, and thence to Merv, to drive the hated Russians back to the Caspian, his hosts, as an expression of their desire to secure British protection, made Mr. O'Donovan their commander or khan; and during his subsequent stay in Merv a banner floated in front of the house he occupied to indicate the dignity to which he had been raised. When the news arrived of Kandahar being vacated by the British forces, Mr. O'Donovan felt that he could no longer be safe in Merv. With some difficulty, under the pretext of attending a pretended council at Meshed, he induced the Turkomans to allow him under an escort to return to that town, from which he was able to make his way again to civilised countries.

Previous to O'Donovan's journey in June of last year, Colonel C. E. Stewart had also explored the parts of Persia bordering on the Turkoman desert, and though he did not penetrate so far as the adventurous correspondent of the *Daily News*, he has added considerably to our geographical knowledge of that country. In the disguise of an Armenian horse-dealer he travelled through the frontier regions of Khorassan, and has compiled an admirable map of this interesting borderland, as well as of parts of Central Persia through which he travelled on his way thither.

Further to the eastward the Russian geologist, Severtsof, has been doing important work in the region of the Pamir. The

results of his researches in this district prove that the famous Bam-i-dunya, or "roof of the world," is not, as was formerly believed, a region of lofty plateaux, but is broken up into ridges and narrow valleys, the former rising from 6,000 to 9,000 feet above the latter, and their culminating points reaching in some cases the great height of 25,000 feet above the sea-level.

Physics.

Recent discoveries in physics furnished Dr. Siemens (as might have been expected) with a large portion of subject-matter on which he dilated in his presidential address to this year's meeting of the British Association; electrical matters more especially were very fully discussed, illustrated as they had been by the successful exhibition of electrical appliances at the Crystal Palace. The various applications of electricity, both to lighting, heating, and as a motive power are, to a certain extent, now taken out of the region of pure science and have become the property of what may be called the new profession of the electrical engineer, and their subordination to the various wants of social life bring them more prominently before the public in the many commercial projects which are continuously springing up. Many as are the difficulties in the way of the universal use of the electric light, there is every reason to believe that they are not far distant from solution, if our chemists and physicists continue to work in the future as they have been doing in the past. The use of the telephone is steadily making its way in the country, and judging from the number of projects for the conversion of electric energy into motive power, the realisation of a successful electric tramway over longer or shorter distances cannot be far off.

The conversion of the energy of electricity into that of heat has resulted in the invention of the electric furnace, which gives a temperature previously quite unattainable and practically unlimited. In experimenting with this furnace, clay crucibles are useless, as they are fused in a few minutes, so that crucibles of plumbago must be employed. A mass of iron weighing six pounds, kept under the action of the arc for twenty minutes, was rendered quite unforgeable, and steel fused in the furnace showed a spongy and crystalline fracture. In one experiment one pound of copper was put into the furnace, and on the latter being opened 900 grains of the metal only remained, the rest having been volatilised by the intense heat.

Hydrodynamic Analogies to Electricity and Magnetism.—One of the most interesting objects (from a scientific and purely theoretical point of view) in the Paris International Electrical Exhibition of 1881 was a very complete collection of apparatus designed by Professor C. A. Bjerknes, of Christiania, to illustrate the fundamental phenomena of electricity and magnetism by the analogous ones of hydrodynamics. What is most remarkable about Professor Bjerknes' researches is that they are all the result, not of haphazard experiment, but of abstruse mathematical investigation and careful calculation. Not until after years of patient study was he able to construct the beautiful pieces of apparatus by means of which he verified experimentally the results of his theoretical previsions.

It has long been known that if a tuning-fork be struck and held near to a light object like a balloon the latter will be attracted. Starting with the generally accepted theory of this action, Dr. Bjerknes, by means of a couple of drums or tambours which can be made to vibrate or pulsate simultaneously or alternately in a trough of water, succeeds in showing all the phenomena of electric and magnetic attraction and repulsion. When the drums are brought near to each other in the same phase of contraction and expansion they will attract each other, when in different phases they repel each other. Similarly a sphere which is caused to oscillate in the water so that opposite sides are in opposite phases of oscillation, resembles in its properties a magnet with opposite poles. Again, a rod of cork is suspended in water by a thread attached to the bottom of the trough, and another one of metal is suspended by a similar thread from the surface of the water; a vibrating drum being brought near to them the cork rod will set itself equatorially and the metal rod axially, illustrating very clearly the analogous phenomena of dia- and para-magnetism.

To explain with any clearness the theory on which these analogies rest, would far exceed the space allotted to this article. Briefly stated, Professor Bjerknes looks upon the water in his trough as the analogue of the medium which Faraday's hypothesis required for the production of the various magnetic phenomena; and on the same view these attractions and repulsions are due, not to the action of one body on another, but to the mutual action of one body and the water in contact with it. In the early part of the present year the Professor exhibited his beautiful apparatus and read an extremely interesting paper on the subject to the Physical Society of London.

These experiments of Dr. Bjerknes have been gone over by Mr. Stroh, a member of the Society of Telegraph Engineers, who, however, uses air as the medium for propagating the pulsations of the drums instead of water. His drums are small shells of wood covered with an elastic membrane, which is caused to vibrate by a column of air pulsating through a tube and set in motion by a vibrating rod. With a set of most beautifully devised apparatus, Mr. Stroh has not only obtained all the results of his predecessor, but he has gone further and investigated the condition of the air between the two pulsating drums. By a series of test experiments he was able to demonstrate that the lines of pressure of the air in this space are practically identical with those which Faraday revealed to us in the magnetic field by means of iron filings.

Electro-Generative Fuel.—At the recent meeting of the French Association for the Advancement of Science, Dr. Brard, of La Rochelle, read a paper before the Physical Section in which he described a new method of generating electricity by the combustion of a peculiar kind of fire-slab. This slab consists of a brick of carbonaceous matter and a brick of nitrate of soda or nitrate of potash, placed together, but separated by a thin sheet of asbestos paper, and both enveloped in a wrapper of asbestos. The carbon brick is formed of about 100 grammes of coal-dust, kneaded into a paste with tar or molasses, and shaped in a mould by heat. From the peculiarity of this mould the brick has a pitted or corrugated surface above, and is perforated with holes through and through from the upper to the under side. Strips of brass or copper are also embedded in the under side of the brick to serve as an electrode for the carbon pole of the electro-generative element. The other brick consists of a mixture of three parts ashes and one part nitrate of potash or soda, melted together and poured on the corrugated surface of the carbon, which, however, is first covered with a layer of asbetos paper. Brass strips are also inserted in this compound to serve as the electrode. When wrapped in asbestos and thrust into a furnace or fierce fire, the slab thus formed constitutes a generator of electricity. In such an element the carbon forms a negative plate, and is oxidised just as zinc is oxidised in the ordinary voltaic cell; the nitrate of potash is the oxidising substance. The slab becomes a thermo-chemical battery, and Dr. Brard states that an electric current is produced strong enough to actuate an ordinary electric bell. By joining up two or more of these elementary slabs after the

manner of the voltaic battery a more powerful current is obtained, three or four elements being sufficient to decompose water.

Geology and Palæontology.

Palæontological Discoveries in Scotland.—For some years past the Geological Survey of Scotland has been engaged in the detailed investigation of the carboniferous rocks between the Silurian hills which form the southern barrier of the Scotch lowlands and the English border. In the course of these explorations a complete collection of the rocks and fossils of the district has been gathered from every available stratum, and on submitting this collection to analysis and arrangement, a discovery of extraordinary palæontological value has been made. From one particular zone of shale on the banks of the River Esk, an immense number of previously unknown organisms belonging to the carboniferous system has been exhumed by the survey.

The more important treasures from these shales of Eskdale and Liddesdale consist of the remains of fishes, crustaceans, and scorpions in an excellent state of preservation. Out of twenty-eight species of ganoid fishes discovered in this district, no fewer than twenty have been pronounced by Dr. Traquair to be absolutely new, and several new species of crustaceans have also been brought to light. One of the most singular features of this recent find is the abundance of the remains of scorpions in the lower carboniferous rocks of the Scottish border. A comparison of the palæozoic form with the living scorpion seems to show that they differ in no essential respect, so far at least as regards external organs; whence it is deduced that the scorpion has remained with hardly any change since carboniferous times. Another interesting feature is the discovery that some curious specimens previously considered to be cycads are not in reality plants, but comb-like organs belonging to fossil scorpions.

A New Salt Supply.—Hitherto the chief supply of rock-salt, a product of the highest importance in the chemical industries, has come from the beds in Cheshire and Worcestershire; in 1878 the district of which Nantwich is the centre produced nearly 1,800,000 tons of this valuable mineral, and at Droitwich 230,000 tons were raised. Very lately a fresh store of salt has been discovered and is now being made available for the use of the acid and alkali manufacturers on the Tyne. It has long been known that a bed of rock-salt and gypsum underlies the coal-beds of the

Cleveland district in the north-east angle of Yorkshire and the south of Durham. So long ago as 1859 Messrs. Bolckow and Vaughan commenced boring for salt near Middlesborough, but at a depth of 1,313 feet relinquished the attempt, owing to the quantity of water met with. In 1874 Messrs. Bell Brothers, using the Beaumont diamond bore, came on a fine bed of rock-salt at 1,351 feet at Port Clarence, and on a fresh attempt in a more favourable situation, about eighteen months ago, they succeeded in reaching the rock-salt bed at 1,200 feet. This they now propose to work, and at the end of August last they sent a first cargo of about 200 tons of good salt to the chemical manufactories on the Tyne.

The process they adopt for getting the salt is that employed in Würtemberg and other salt-producing centres of the continent: two parallel tubes are sunk into the salt-bed; through one of these water is sent down, and when fully saturated with salt it is pumped up as brine through the other tube. This brine is then evaporated, and the remaining salt in rough crystals is ready for the market. Of course in this state it is not pure, nor fit to be used at the table; it contains besides the true common salt—chloride of sodium—sulphate of sodium and other salts of magnesium and calcium. After repeated evaporation the sweepings and residue from the process of purification can be sent into the market for agricultural purposes.

The success of Messrs. Bell has stimulated other proprietors to explore the salt-beds in the valley of the Tees still further; Bolckow and Vaughan will resume the boring operations which they had previously given up, and Messrs. Allhusen, the well known chemical manufacturers on the Tyne, are about to purchase land near Port Clarence for the same purpose. A geological examination of the district shows that the deposit of salt ranges in an unbroken line from Middlesborough to Harrogate.

Biology.

The Cause of Tuberculosis.—It is now considered to be perfectly well established that the fearful disease, tuberculosis, or, more popularly speaking, consumption, is an infectious malady, communicable from one human being to another, from man to animal, and from animal to animal; the successful experiments of inoculating with, feeding on, and causing to inhale human tubercular matter, carried out on the lower animals, such as guinea-pigs, rabbits, dogs, pigs, &c., by various physiologists, both in this

country and on the continent, are conclusive on this point. What the cause of the malady is has until now been undetermined, but it has been often suggested that, like other infectious diseases, it is of a parasitic origin.

In an able address, delivered in the spring of this year, before the Physiological Society of Berlin, Dr. Koch, Government Adviser in the Imperial Health Department, whose investigations on the etiology of infectious diseases have already obtained for him a brilliant reputation, described the nature of the experimental inquiries by which he has succeeded in determining the precise character of the contagium of tuberculosis. He subjected the diseased organs of a great number of men and animals to microscopic examination, and found in all cases the tubercles infested with a minute rod-shaped parasite, which by means of a special dye he was able to differentiate from the surrounding tissue. These parasites, or bacilli, differ from all other micro-organisms by characteristic properties. Transferring directly by inoculation the tuberculous matter from diseased to healthy animals, he in every instance reproduced the specific disease, and he ascertained the constant presence of the specific bacillus both in spontaneous as well as in artificially produced tuberculosis.

To meet the objection that it was not the parasite itself, but some virus in which it was imbedded in the diseased organ, that was the real contagium, Dr. Koch cultivated his bacilli artificially for long periods of time and through many successive generations outside the living body. With great care to secure a perfectly sterile medium, he prepared from the serum of blood of animals a transparent mass well adapted for the cultivation of the tubercular parasite. Such a mass inoculated on its surface with tubercular matter became gradually covered with peculiar dry scaly masses, which are in reality colonies of the specific tubercle bacillus. A minute particle of this crop was used for establishing a second similar cultivation, this again for a third, and so on to any number of successive generations. At the end of the process the bacilli thus obtained were introduced into the circulation of healthy animals of various kinds, and in every case inoculation was followed by the reproduction and spread of the parasite and the generation of the original disease.

It is easy, therefore, to understand how the contagium of tuberculosis can become communicable. Koch has examined the matter expectorated from the lungs of persons affected with phthisis, and found in it swarms of bacilli, but was unable to

detect the slightest trace of the organism in the similar matter of persons free from the disease. He found, too, that the matter in the former case was highly infective, and that its virulence was not destroyed by drying. Guinea-pigs infected with expectorated matter which had been kept dry for so long a period as eight weeks were smitten with tubercular disease quite as virulent as that produced by fresh expectoration. Particles of the dried sputa of consumptive patients may float in the air, and are liable to be inhaled by, and thus to infect, healthy persons who may be in the same room.

The first step in the rational treatment or every malady is the recognition of its cause, and Koch's discoveries have already led to the conclusion that consumption ought to be both preventible and curable. In a paper read before the Biological Section of the British Association at the Southampton meeting, Mr. F. J. Faraday connects the arguments of Koch with the discovery of Pasteur that specific disease germs decrease in virulence when kept in the presence of oxygen. Hence he suggests the possible cure of a consumptive patient by keeping in a pure atmosphere where oxygen may have access to the affected parts. As giving support to this hypothesis, he pointed to the decrease of mortality from consumption in the army since the improvement of barrack ventilation, and to the relief afforded to consumptive patients by sea-voyages. To the same conclusion he refers the efficacy of the air of pine woods, carbolic acid inhalations, and other similar remedies which have already been suggested, perhaps rather empirically.

The Salmon Disease.—Of a similar character to those of Koch are Mr. T. H. Huxley's researches on the cause of the epidemic disease, which, for some years past, has prevailed among the salmon of certain Scottish and British rivers, from the Tay on the north as far as the Conway on the south. This malady makes its appearance in the shape of white patches upon the skin of those parts of the body of the fish which are not covered with scale. These patches, which, when first formed, are about the size of a sixpence, rapidly increase in size and become confluent with other patches which may have appeared in the neighbourhood. As the patch spreads the true skin beneath the slough ulcerates and an open bleeding sore is formed, which may extend down to the bone, while it passes outwards into burrowing sinuses. When the disease reaches this stage it causes great irritation; the fish dash about and rub themselves against the

stones, and thus probably aggravate the evils under which they suffer. Those which succumb to the disease become weak and sluggish, seeking the shallows near the bank of the river, where they finally die. Curiously enough the flesh of a salmon affected by the disease presents no difference in texture or colour from that of a healthy fish, and those who have made the experiment declare that the flavour is just as good in the former case as in the latter.

When the slough-like substance from the white patches above referred to is subjected to microscopical examination, it is found to be a *mycelium*, or fungus growth, composed of fine tubular filaments terminated by elongated oval enlargements. These enlargements soon open at the apex and set free the zoospores within, which then became actively or passively diffused through the surrounding water.

Huxley's investigations show how the disease is transferred from one fish to the other. Taking the body of a recently killed house-fly he rubbed it over a patch of the diseased skin of a salmon, and placed it in water; in the course of forty-eight hours the body of the fly became covered with a crop of white cottony filaments, precisely like the fungus of the original salmon disease, producing in the same way abundance of zoospores. From these zoospores another dead fly was infected and a second crop of filaments obtained, which were capable of affecting with the disease a living fish.

Professor Huxley's conclusion is that these fungus filaments belong to the genus *Saprolegnia*—that is to say, they are saprophytes, which ordinarily live upon and derive their nourishment from dead animal and vegetable matter, but under favourable circumstances act as parasites on living animals. The cause, therefore, of the salmon disease may exist in all waters in which dead insects infested with *Saprolegnia* are met with, that is to say, probably in all the fresh waters of these islands at one time or another. On the other hand, *Saprolegnia* has never been observed on decaying bodies in salt water, and there is much reason to believe that if a diseased salmon returns to salt water all the fungus which is reached by the saline fluid is killed, and the destroyed epidermis of the fish is restored.

A Poisonous Lizard.—Up to the present it has generally been supposed by naturalists that none of the lizards were venomous, or possessed any organs capable of manufacturing a poisonous secretion. This was the more remarkable, since the lizards are

closely related by structural affinities to another class of reptiles, the snakes, among which we know there are several species possessed of the most virulent and deadly poisonous apparatus. It is only necessary to instance the hollow fangs in the upper jaw of the cobra and rattlesnake, communicating with the poison gland at their base, to show with what dangerous offensive weapons many of the snake family are armed. That the lizards are near relations of the snakes will be understood when it is explained that the harmless blind-worm of this country is in reality a lizard destitute of legs.

Recently the Zoological Gardens of London have, through the kindness of Sir J. Lubbock, become possessed of a living specimen of a novel kind of lizard, the *Heloderma horridum*, from Puebla, in Central America. Travellers in Mexico had often circulated the story that a poisonous lizard was found in that country, but naturalists, without any evidence of the existence of such an animal, had naturally considered the stories as exaggerations. On its arrival in the Zoological Gardens the creature was freely handled, and being a lizard was regarded as harmless; certainly at first it was dull and inactive, probably owing to its long voyage and to the want of food. On a close examination of the mouth of the *Heloderma*, however, by Dr. Günther, it was found that its teeth formed a literal series of poison-fangs, each possessing a true poison gland. Experimenting upon the virulence of the poison, Dr. Günther made the lizard bite a frog and a guinea-pig; the frog died in one minute, the guinea-pig in three. As the experimenter observes, the virus required to produce these effects must be of singularly acute and powerful nature.

THE MUSIC OF THE YEAR 1882.

WHATEVER view may be taken of the position which England holds among the musical nations of the world—and not a few of her sons, it may be remembered, deny her claim even to the lowest place in such a category—there can be no question as to the musical activity of which she is the scene and London is the centre. All through the year, if the whole area of the country is taken into account, there is a continuous stream of music flowing either in the provinces or in the capital. In the metropolis

the Monday Popular Concerts, and, if we include Sydenham within its radius, as we are fully justified in doing, the Crystal Palace Saturday Concerts, fill up the period between the close of Society's season and the beginning of its next round of gaiety, while in the spring and summer months, when the town is full in obedience to the caprice of fashion, the concert-rooms are seldom untenanted. In the country the greater festivals commence with Herr Kühe's enterprise at Brighton in February, and only close with the meetings of the Three Choirs or one of the triennial festivals at the end of September, the winter season being occupied by the regular work of the local choral societies. But while this ceaseless round of music-making is normal, there are times when the concert-givers' work is exceptionally hard, and it would, we fancy, be difficult to point to any year in which there has been greater competition among the entrepreneurs than in the year 1882. New societies, with aims so nearly identical as to leave them little scope for any other rivalry than that of excellence of performance, have invited the suffrages of the public, while in addition to the speculations of English conductors or of the resident foreigners who, like Messrs. Hallé and Ganz, are virtually naturalised amongst us, we have been almost surfeited with orchestral and other schemes submitted by eminent continental musicians who, despite the proverbial perfidy of Albion, continue to flock to her shores in the hope of replenishing their exchequer. When, for instance, to the orchestral concerts of the Crystal Palace, the Philharmonic Society, and Sacred Harmonic Society, we add Mr. Walter Macfarren's concerts, the Richter concerts, the Symphony concerts conducted by Mr. Hallé, and the Ganz Saturday afternoon series; when the performance of the Wagner Trilogy, and the series of German operas, are placed side by side with the Italian Opera at Covent Garden and the Carl Rosa season at Her Majesty's Theatre; and when the Monday Popular Concerts of Mr. Arthur Chappell, and the Grosvenor Gallery Concerts of Mr. Hallé are supplemented by the chamber music programmes of Mr. W. H. Holmes, Mr. E. H. Thorne, Herren Weber, Kummer, and Albert, and Herren Laistner, Mahr, and Leu, not to mention the pianoforte recitals of Madame Sophie Menter and an unusually numerous party of continental players, we have what a critic not unjustly described as a veritable "plethora of music" in London alone. That it was, for the most part, good of its several kinds is in itself a matter for satisfaction, and unless the arts are held to be superior

to the commonplace law of supply and demand, there must, we submit, be some indication of a growth of appreciative power, or works which demand sustained attention and not a little knowledge for their intelligent hearing would not be so widely asked for by paying audiences. In England, it must not be forgotten, subsidies for musical purposes are unknown, and personal patronage is so seldom accorded by the Royal House, and in no case by the Sovereign, that concert-givers are compelled to look to the public for support, and with this fact before us, we see every reason to be satisfied with the tale which the year has to tell.

Looking at the outset at the state of musical education, the closing of the National Training School at South Kensington is the first event we have to chronicle. The school, as our readers will recollect, was opened in 1876, by funds supplied for the most part in the form of endowments by private donors, public corporations and localities, for scholarships, to be held for five years by those who were successful in the preliminary competitions, and thus, when the five years had expired, the school had run its course of life and was dependent upon a renewal of the liberality of its original creators. This, in some cases, was forthcoming, but not to a sufficient extent to maintain the institution, and at Easter, 1882, its doors were closed, the balance to its credit, amounting to about a thousand pounds, being devoted to the completion of the training of some of the most deserving students and to the newly established Royal College of Music, which will in effect be an extension of the Training School on a wider basis. The Royal Academy still continues its useful work, in educating all the students it can accommodate, its means of usefulness being still crippled by the want of house-room and the need of a larger permanent income. The efforts to establish a Musical Academy in the City of London continue to be attended with the most complete success, and few institutions can boast of a better return for a comparatively small outlay than is shown by the Guildhall School of Music, under the principalship of Mr. Weist Hill. At Trinity College, London, now registered as a company not trading for profit, the reversion to the original scheme of furnishing musical as distinguished from general instruction has been attended with a fair measure of success, and the Council are striving to raise a building fund in commemoration of their arrival at the tenth year of their existence. The College of Organists also holds on its way and

does a quiet but useful work in furnishing a centre for the profession, opportunities of education for its members, and a standard of examination which enables all who can reach it to enrol themselves as Fellows of the institution. The Society of Arts is extending its revived examinations in music in London and the provinces, and it is a matter for regret that several private adventure academies are seeking to compete with it in this direction, the fees of candidates forming, it is to be supposed, a sufficient inducement to their proprietors to enter the field. A few years since the only certificates of the possession of musical knowledge, or of practical musical capacity, were the degrees in the faculty obtainable at Oxford, Cambridge, and Dublin: now there are so many fellowships and associateships that a diploma in music is almost as doubtful a guarantee of real excellence as the possession of a degree conferred by a German or American University on a non-resident and virtually unexamined applicant. The sooner these discords are resolved the better for the profession and the public.

The session of the Musical Association produced a series of papers fairly representative of the varied sides from which music can be approached in the abstract and the concrete, as a science and as an art, by the thinker and the executant. Mr. Bosanquet discoursed "On the Beats of Mistuned Harmonic Consonances;" Dr. F. E. Gladstone on "Consecutive Fifths;" and Dr. Henry Hiles on the passage "From Rhythmic Pulsation to Classical Outline." Mr. Bosanquet dealt with the mechanical but very important matter of "The Arrangement of the Stops, Pedal and Swell, in the Organ," and Mr. T. L. Southgate gave an interesting account of "Various Attempts that have been made to record Extemporaneous Playing." On what may be regarded as the more popular side of the Association's scheme were papers by Dr. W. H. Monk, on "The Cultivation of Church Music;" by Mr. Eustace J. Brakespeare, on "Songs and Song Writers;" by Mr. Arthur O'Leary, on "Sir William Sterndale Bennett: a brief review of his Life and Works;" and by Mr. H. F. Frost, on "Richard Wagner's Music Drama, 'Tristan und Isolde.'" A paper of the musical antiquarian type, "On some Italian and Spanish Treatises on Music of the Seventeenth Century," was contributed by Sir Frederic Gore Ouseley, Bart., the President of the Association. A few details as to some of the papers will be of general interest to musicians, both professional and amateur. In his contribution on "The Arrangement of the Stops, Pedal and Swell, in the

Organ," Mr. Bosanquet discussed some of the resolutions arrived at by the College of Organists at its conferences on this important question, and described certain improvements introduced in an instrument built for his own use by Messrs. Gray and Davison. The College, in one of its resolutions, had recommended the adoption of some means of operating on the swell, in addition to the ordinary pedal, and Mr. Bosanquet, working independently, had endeavoured to meet the need which he had also recognized, by designing a new swell action from the back of the seat. By this contrivance, the seat, to which a breast strap is attached, is movable, and by leaning forward lightly against the strap, the swell is opened. The gain from this is that in works where both feet are busy with the pedals, the swell can be used, and it is also specially advocated as affording a relief in the use of the swell during accompaniment. A second recommendation of the College—that there be some contrivance to fix the swell pedal at any point—has been met by Messrs. Gray and Davison, in Mr. Bosanquet's organ, by a contrivance which causes the swell pedal to hitch itself at any point when the foot is removed, an arrangement independent of the back swell action already described. Dr. Monk's paper on "The Cultivation of Church Music," was partly historical and partly critical, opening with a *resumé* of the papers on the subject, read at the Church Congresses from 1863 to 1881, the last year in which it found a place in the Congress scheme, and when Dr. Monk himself dealt with it. For the improvement of church music as a branch of composition, Dr. Monk recommends the establishment of a Society for the encouragement of church composition, by means of prizes to be offered to young writers. Mr. Brakespeare put forward the German "lied" as the model of a "song," and gave an interesting sketch of the growth of song composition in Germany, Schubert, completing the strivings of the Berlin school of writers (Reichardt, Zelter, Berger, and Klein), and giving the "lied" its full development, while Schumann followed Schubert, and Franz opened again in a new direction. Mr. Brakespeare charges English song composers with very often only presenting a reflex of the German spirit, and urges them to make a corresponding movement without losing the English sentiment and idiom of expression. Too many English writers, he thinks,—and we imagine few who sing or listen to their songs will be inclined to differ from him—"are apt to sacrifice somewhat of their higher aims in the endeavour

to make their song a concert success as well as an artistic one —to kill the proverbial two birds." This is, of course, a patent fact, but in defence it would probably be remarked that song writers and song singers must bend to the commercial exigencies of the situation, and that so long as publishers decline to pay high prices for anything but the *ad captandum* ballad, and offer great singers a royalty for singing it, so long will that special class of music form the staple production of English song composers. In the discussion which followed a true and just remark was made by Mr. Goldschmidt that "a big concert room like St. James's Hall is hardly the place for a song, whether German or English." In other words the song or at least the "lied" of the German type requires to be sung in a small area to ensure its full appreciation, and loses, like instrumental chamber music, when it is performed in a monster room. The erudite paper of Dr. Gladstone on "Consecutive Fifths" dwelt specially on the historical aspect of the subject, and resulted in the usual determination of doctors to continue to differ, some of the eminent musicians present declaring them to be not merely contrary to all rule and precedent but hideous and ugly, while Mr. G. A. Osborne wished distinctly "to avow his infirmity," and stated that he delighted most thoroughly in all the consecutive fifths cited as an illustration from a work by Chopin. Mr. O'Leary's review of Bennett's life and works gave an interesting and succinct biography of the greatest of modern English musicians, and made some few critical observations on his style and characteristics as a composer, attributing to him, as to Bach, a deep religious sentiment and a reverent love of truth inspired. The remarks made by the subsequent speakers, several of whom had been intimately acquainted with the former distinguished Principal of the Royal Academy, served to bring out many interesting facts connected with his career, while Mr. Otto Goldschmidt suggested that it would redound to the honour of his name and to the honour of the musical art in this country if a collection of his works such as we possess in a most beautiful form of Sebastian Bach and Mendelssohn, of Beethoven and Mozart, could be brought out complete, uniform, and correctly edited. It will thus be seen that the proceedings of the Association are well calculated to advance the interests of music in this country, and it is much to be desired that the ranks of its members should be largely strengthened both from the professional and amateur side.

An important change has to be chronicled in the history of the opera in England, the long-continued maintenance of two great companies devoted to the performance of Italian opera, or, to speak with greater accuracy, of opera in Italian, having given place to a single series of performances under the management of a limited company with Mr. Gye, a son of the former famous impresario, at the helm. The disappearance of Mr. Mapleson's formidable competition can scarcely be said to have resulted in any marked improvement at Covent Garden, for the only absolute novelty--Lenepveu's "Velleda"—proved an utter failure, nor was any noteworthy success scored by the new singers who came forward. The absence of a second set of Italian operas was, however, more than compensated for by the appearance of a company of German artists of high merit under Herren Franke and Pollini, at Drury Lane, where also Wagner's "Ring des Nibelungen" was produced by Herr Schulz, and attracted intense interest. Scarcely less zealous in the cause of the poet-composer of Bayreuth was Mr. Carl Rosa, whose highly efficient company, strengthened by several singers of repute, gave fifty-six performances at Her Majesty's Theatre under the conductorship of Signor Randegger. As many as twenty-six nights were allotted to "Lohengrin" and "Tannhäuser," the splendid mounting and *ensemble* of both works giving them a strong hold upon the public. Balfe's "Painter of Antwerp," styled "Moro," from the name of its principal character, pleased the lovers of melody if it failed to satisfy the critics, and Thomas's "Mignon" and Bizet's "Carmen" were two worthy specimens of modern French workmanship. A scheme thus wisely comprehensive deserved to succeed, and although the vast dimensions of the theatre in the Haymarket made Mr. Rosa's speculation a somewhat dangerous one, he was rewarded with good houses and high praise from the press.

The concert season was marked by the final performance of the Sacred Harmonic Society, the work chosen for the occasion being Handel's "Solomon," while the programme of the preceding concerts had included Sullivan's "Martyr of Antioch," and a new "Te Deum" by Mr. W. G. Cusins. It is scarcely creditable to musical England and eminently discreditable to musical London, that a society which ought to have been keeping its jubilee—it was established in 1832—should thus have met for the celebration of its obsequies in a year when the number of musical performances testified to an exceptional willingness on

the part of the public to fill concert rooms on the most trifling provocation. The explanation of the anomaly is not, however, very far to seek. To the musician the *raison d'être* of such a society would seem to be not merely the performance of the best known oratorios of Haydn and Handel, but the introduction of new works, if not the encouragement of composers in their production: the fulfilment of this latter function, at any rate as attempted by the managing body, proved unremunerative, and even a respectable balance sheet was only to be secured by an adherence to the well-worn track. While, therefore, the loss of the Society which had done so much to familiarise the public with the masterpices of sacred music, and had made a Handel Festival a possibility by furnishing the nucleus of its gigantic band and choir, is to be regretted on many grounds, it can can scarcely be lamented as a direct loss to the novelty producing power of musical England. An effort is now being made to revive the Society as a limited liability company, formed not for purposes of monetary profit, but for the promotion of art, and at the same time Mr. Willing, who had occupied the organ seat at the Society's performances since Mr. Brownsmith's death, has also established a society under his own conductorship, which aspires to cover the familiar ground.

While 1882 has thus witnessed a loss, it has also been marked by a virtual gain in the revival or reconstruction of Mr. Henry Leslie's choir, which still bears its honoured name and has its founder for its president. Mr. Randegger is the conductor of the new choir, and its financial business is to be managed by a committee. Its first concert, given during the summer, offered the best auguries for success on the new footing. The net result of the temporary suspension of the choir has been to bring into prominence several other newly-formed choral societies, which are likely to contest its claims to supremacy, and among them may be named the choir of Mr. Geaussent, the pianist; the St. Cecilia Choir, conducted by Mr. Lawson; and Mr. Barnby's London Musical Society. Each of these bodies gave concerts during the season. Among other performances of special interest, a high place must be given to the concerts of the Bach Choir, at which Palestrina's famous "Missa Papæ Marcelli" and Bach's "Missa Brevis" in A received careful performance under Mr. Goldschmidt's direction.

In the region of instrumental music the Crystal Palace concerts,

now entered on the second quarter of a century of their history, were marked by the same genuine eclecticism which has made them an educating agency second to none in Europe, and although in the past the greater things of the art have been performed again and again, the schemes of the winter concerts showed that Mr. Manns is still as keen as ever in his desire to represent fairly all schools which can with justice be termed classical. Sgambati's Symphony in D and Dvorak's symphony in the same key were among the most interesting novelties of the season. The presentation of a valuable testimonial to Mr. Manns formed a fitting complement to the more artistic gift of a laurel crown, which, as recorded in the last issue of the "Companion," was handed to him at the completion of the twenty-fifth year of the Sydenham concerts. In the Philharmonic Society's concerts the influence of the new directorate was traceable, and vitality was manifested by the first performance in England of Rubinstein's quasi-oratorio "Das Verlorene Paradies," Brahms' "Nanie," Liszt's symphonic poem "Hungaria," and a pianoforte concerto by Sgambati, with the composer at the keyboard. At the Symphony Concerts, conducted by Mr. Hallé, the whole of Schumann's "Faust" music was given, together with the "Harold" of Berlioz, and the Choral Symphony and Egmont music of Beethoven. Mr. Ganz, who essayed once more the task, often attempted, of "keeping a house" for a Saturday afternoon concert in Regent Street, produced Liszt's Dante Symphony, the "Divina Commedia," and gave a hearing of Sgambati's Symphony in D. At the Richter concerts the performance of the Mass in D of Beethoven was, as in the previous year, "a thing to be remembered."

Chamber music lost one of its strongholds by the discontinuance of the Musical Union *matinées*, the effort of M. Lasserre to keep together Professor Ella's aristocratic *clientèle* having failed. The resumption of these pleasant concerts is much to be desired. The aged founder of the Union, whose eyesight, we regret to say, is completely gone, has been presented with a gratifying testimonial on his enforced retirement. At the Monday Popular Concerts Mr. Chappell gave a second hearing to Sterndale Bennett's sextet in F sharp minor for pianoforte and strings which had all the freshness of a new work, as its only previous performance at these concerts was in 1876. Svendsen's string ottet, Op. 3, Schumann's "Spanisches Liederspeil," Mr. A. C. Mackenzie's larghetto for pianoforte and 'cello, and Bach's sonata

in C minor for pianoforte and violin were among the features of a very interesting season. Fräulein Krebs was once again among the pianists.

The extension of high-class concerts to the suburbs was carried out under Mr. Chappell's direction at Denmark Hill, where he gave a series of concerts on the Monday Popular model with some of the great players of his St. James's Hall staff. Mr. Ebenezer Prout, at Shoreditch Town Hall, continued his admirable concerts, and produced his own cantata "Alfred;" while at Holborn Town Hall Barnett's "Ancient Mariner" received effective performance; and Mr. Lemare, at Brixton, continued his efforts with band and choir. Appealing more directly *ad populum*, the success of a series of "cheap" concerts given on commercial principles at Kensington Town Hall by Mr. Ridley Prentice deserves to be mentioned as a proof that concerts for the people can be "made to pay;" while at the Victoria Coffee Palace, formerly known in the colloquialism of the New Cut, Lambeth, as "the Vic," *anglicè* the Victoria Theatre, concerts were organised on a basis of musical philanthropy; among the professors who supported the movement being Dr. G. A. Macfarren and his colleagues and pupils from the Royal Academy of Music.

In the provinces the musical festivals were unusually attractive. At Birmingham M. Gounod conducted his new oratorio "Redemption," which is to be regarded, according to his inscription on the score, as the "opus vitæ meæ" of the composer of "Faust;" among the other novelties being Benedict's "Graziella," Ganz's "Holy City," Villiers Stanford's Orchestral Serenade in G, Gade's "Psyche," and H. Hubert Parry's Symphony in G. At Hereford Mrs. Meadows White, known at the Royal Academy as Miss Alice Mary Smith, submitted a setting of Collins's "Ode to the Passions;" Dr. Garrett's Oratorio "The Shunamite" was performed for the first time; and Molique's "Abraham" was revived. At Chester the triennial festival revived three years ago was held again, and Dr. J. F. Bridge's "Boadicea" was performed. At Bristol in mid-October Mr. Hallé conducted the festival at which Mr. A. C. Mackenzie's new cantata "Jason" was the only actual novelty, and Gounod's "Redemption" the chief attraction. At Paisley, where Mr. Manns's orchestra was engaged for three days, and at Oswestry, where competitions of village choirs on a plan set in operation by Mr. Henry Leslie formed a part of the scheme, festivals were

also held; and at Edinburgh Sir Herbert Oakeley's Reid Concert once more supplied the occasion for a "musik-fest," at which Mr. Hallé's orchestra played. These great meetings, however, no longer constitute the only choral and orchestral performances of the first importance in the provinces, for regular series of concerts are to be noted at Glasgow, where Mr. Manns conducted an interesting recital of Mendelssohn's symphonies in chronological order; at Manchester, where Mr. Hallé produced "Eric," by Mr. Hecht, a clever local professor, whose "Charge of the Light Brigade" was heard in London during the season; at Liverpool, where Mr. Harold Thomas's overture "Mountain and Moorland," remodelled since its performance in London, was played; at Cambridge, where the University Musical Society anticipated the Hereford Festival by performing Dr. Garrett's cantata "The Shunamite," and produced Mr. Stanford's Symphony in D minor; and at Bristol, where Mr. Riseley's concerts are of genuine interest and value.

As a note of progress, it may be added, that on the Continent during the year English composers were to the fore, Cowen's Scandinavian Symphony being well received at Vienna, Pesth, and Stuttgart, while at Dresden a welcome was given to Mr. Stanford's elaborate setting of the hymn "Awake my soul."

The most important contributions made to English musical literature during the year come, as in the year 1881, from the house of Messrs. Sampson Low, Marston, and Co., in a translation of Sebastian Hensel's interesting volumes on the Mendelssohn family, translated from the second revised edition of the German original, by Carl Klingemann, and prefaced by Dr. George Grove. The charm of the domestic and social life of Felix Mendelssohn can scarcely have failed to win the admiration of all readers of his published "Letters," and we have here fresh light thrown on the home circle, and many pleasant glimpses of the composer and his sisters. The same publishers are continuing their series of "The Great Musicians," for which Mr. W. A. Barrett has written a capital handbook, biographical and critical, of the English Church composers; Mr. Reginald Lane Poole has given us the first *bonâ fide* English memoir of John Sebastian Bach—all previous biographies of the Leipzig cantor having been translations, and in the main abbreviations also; and Mr. Cummings has done ample justice to Purcell. The issue of the "Dictionary of Music and Musicians," edited by Dr. Grove, has reached the letter S. Among other

works published as this article is in the press are Mr. Barrett's "Life of Balfe" (Remington and Co.), and a translation of Otto Jahn's work on "Mozart" (Novello, Ewer, and Co.).

The obituary of 1882 includes many well-known names. Among composers we note Joachim Raff, Director of the Conservatoire at Frankfort-on-the-Main, one of the most prolific writers of the first rank, who had produced ten symphonies, and whose last *opus* was numbered above 200; Kücken, the writer of many a pretty part-song familiar to English choralists; Edouard Membrée, of Paris; and W. H. Callcott, whose pianoforte "Arrangements" have a deservedly high reputation among teachers. Among vocalists two tenors of fine voice and finished style have passed away—Gardoni, whose organ in *timbre* so closely resembled Mario's, and Wartel, of the Grand Opera at Paris—while of the "first ladies" of days gone by, we have to name Miss Stephens (the Dowager Countess of Essex), and Madame Rudersdorff, who closed her career as a teacher in the United States. The classics of the pianoforte have lost an able exponent in Herr Jaell, often heard in London at the Musical Union and elsewhere, and from the roll of English organists we have to take away the honoured name of James Turle, for fifty-eight years the organist of Westminster Abbey.

METROPOLITAN PHILANTHROPY IN 1882.

PHILANTHROPIC effort in the metropolis, and, indeed, throughout the country during the year 1882, has been marked by the same welcome tendency, already noted in the "Companion" for several years, to confine the establishment of new societies and institutions to those which are distinctly preventative in their action, and to avoid that costly duplication of agencies which was formerly the characteristic flaw of the London charities. Accepting as an axiom the theory that vice is productive of misery just as dirt is the parent of disease, and that the necessity for many charitable institutions would be diminished or removed altogether if the younger section of our population could be more carefully protected, it is satisfactory to find that much energy has been bestowed upon the establishment of homes for girls and young men entering on the business of life, and that the value of such institutions is being recognised on all sides.

The idea of a home for working lads or girls is not indeed a new one, for such a home has been in existence for many years in connection with that admirable institution the Boys' Home in the Regent's Park Road, but the extension of the scheme on a basis sufficiently wide to make it possible to provide anything like adequate accommodation for those who need it in the great city is a distinctly recent development of philanthropy. There are now many of these homes scattered about London, and the work which has been undertaken for boys is at last being taken in hand for girls, for whom lodges and club-rooms are being provided by the Girls' Friendly Society and other agencies. From all points of view this is essentially a move in the right direction. The facts disclosed before the Select Committee of the House of Lords on the Law relating to the Protection of Young Girls, are enough to show that the vice which disfigures not only the East, but the West end of the town, and which inevitably prepares, if it does not absolutely create, many an inmate for the hospital, the workhouse, and the prison, can only be met by prevention, and to this end there is no more beneficent plan of operation than that recommended by Lord Brabazon, Mr. John Shrimpton, and other active workers, of opening houses in which young people may find not merely board and lodgings at a moderate cost, but recreation of a healthy character and possibly the means of education. Testimony to the same effect as that of the witnesses examined before the House of Lords Committee has been given in the report recently published by Her Majesty's Inspector of Factories and Workshops in the Metropolitan district, and it is a matter which only needs to be pressed upon public attention in order to secure for it an amount of financial support commensurate with its practical importance.

In the scarcely less needful task of striving to counteract the evils of intemperance philanthropy has come forward with its Homes for Inebriates, and although legislation on the treatment of habitual drunkards is still urgently required, for the statute with that object is admitted to be utterly ineffectual, voluntary effort is doing much, and the homes already established have proved most beneficial, especially to women. Here, again, the true function of philanthropy has made itself felt, and if sufficient pecuniary aid is accorded to the scheme, it will with wise legislative support do much to diminish what is admitted to be a serious evil.

In the range of institutions for the treatment of the sick, the

adoption of the pay hospital and the provident dispensary is making steady progress. The Home Hospital Association, first promoted by Mr. Burdett in 1877, has not merely established its *raison d'être* by a success which places it on a sound commercial basis, but it has proved the justice of the assumption which experience alone could test—that the public would value the opportunity of obtaining hospital treatment and nursing without having to accept it in the ordinary way. It was stated at the annual meeting of the Association held at the Mansion House in June, that in the house opened in Fitzroy Square seventy-nine applicants for admission had been refused on account of want of room, and the Association has secured additional premises in which patients will be received on somewhat lower terms than in Fitzroy House, thus enlarging the area of its operations. It may be interesting to state that the professional classes of society were chiefly represented among the inmates during the year under notice, the patients including fourteen members of the naval and military services, their wives or daughters; seventeen clergymen, their wives or daughters; eleven members of the legal profession, five medical men, and the remainder members of other professions or persons of independent means. That this Association is worked as a limited liability company may give colour to the assertion that it cannot be properly styled a philanthropic agency, but such a criticism can only proceed from those who unfairly narrow the meaning of the word, seeing that it is a direct benefit to all classes of the population to demonstrate the possibility of working such a hospital on a remunerative basis, while it must also tend to relieve the ordinary hospitals into which in all probability some of these paying patients would have found their way. That the system can be just as satisfactorily utilised for a different section of the public is proved by the continued success of Canon Erskine Clarke's "Pay Hospital" at Bolingbroke House, Battersea, where a lower scale of payment obtains. No better work has ever been done for the country than that which has been accomplished by Mr. Burdett and Canon Clarke in making this new departure in our hospital system not only successful but popular.

A kindred effort to spread a network of provident dispensaries over the metropolis is being made by the Metropolitan Provident Dispensaries Company, which has Sir Charles Trevelyan for its Chairman. Here, again, although donations have been received, and indeed are almost essential to set the scheme afloat, the in-

tention is to make it self-supporting and to relieve the industrious poor from the discomfort of accepting as an act of charity that for which in their degree they are in so many cases able and willing to pay. The Company has undertaken and is empowered by its articles of association to provide, as far as may be necessary, for the expenses of the Metropolitan Provident Medical Association up to a maximum sum of 3,000*l*. The following are the principles upon which the dispensaries established by the Association are constituted :—Each dispensary has the services of a medical staff of respectable qualified practitioners resident in its neighbourhood, who receive a fixed proportion of its income. This is provided by regular monthly contributions of the benefiting members, which, though small, and well within the means of those who pay them, are sufficient, on the principles of mutual assurance, to maintain the dispensary. The members have a right to choose their doctor from the medical staff, and to be attended at their own homes when necessary. Medicines of the best quality are provided at the cost of the dispensary; a dentist and midwife are attached to the staff; and arrangements are made to secure the assistance of skilled nurses, when required. When fairly established, each dispensary is managed by a local committee of *bonâ fide* members, in conjunction with representatives of the medical staff.

Although no addition has been made during the year to the list of London hospitals, a scheme for a New General Hospital for North London has been put forward and is now under discussion. The North-West London Hospital, which is striving to meet the needs of the large and poor population in Camden and Kentish Towns, is commencing to build permanent premises, its present accommodation being utterly inadequate. The contribution made to the funds of the Metropolitan and Suburban Hospitals and Dispensaries on Hospital Sunday exceeded by a considerable amount the collection of 1881, which, in its turn, stood highest in the list of receipts since the establishment of the collection in 1873. The following table shows the results of the collection, and it is specially satisfactory that the tenth anniversary should have yielded such an excellent result :—

1873	..	..	£27,700	1878	..	..	£24,904
1874	..	..	29,936	1879	..	..	26,501
1875	..	..	26,396	1880	..	..	30,404
1876	..	..	27,042	1881	..	..	31,000
1877	..	..	26,083	1882	..	..	34,424

It has been estimated that if 1,500 be accepted as the number

of churches and chapels in which collections were made, this total represents about 19*l.* for each contributory congregation. In the awards made by the Council, several institutions not hitherto assisted received grants, and three having failed to comply with the regulations of the distributing committee were excluded.

The Hospital Sunday Fund is not the only proof of the liberality of the citizens of London given during the year, for each mayoralty as it comes is marked by special appeals from the Chief Magistrate to meet exceptional cases of distress. In the year in which Sir J. Whittaker Ellis was in office, the following sums were received at the Mansion House :—

	£
Russo-Jewish Fund	101,000
Irish Ladies in Distress	16,500
Defence of Property, Ireland	21,000
Egyptian Refugees Fund	8,136
Distress in Iceland	5,000
Emigration	200

Among the new institutions of the year the Church of England Home for Waifs and Strays deserves mention as an attempt to bring under careful supervision and kindly control some of the street Arabs who notwithstanding the large powers of the School Board, and the employment of compulsion to induce school attendance are still to be found on all sides. The idea of the promoter, Mr. E. de M. Rudolf, is to establish central homes in every diocese for the reception of homeless children, and by working on the lines of the Church of England to obtain support from the bishops and clergy. He has already succeeded in opening homes on the north and south of the Thames, in the dioceses of London and Rochester, and has secured the co-operation of many well-known men. The closing of the majority of the Ragged Schools has left a large number of children without any shelter, and Mr. Spurgeon in a speech recently made at a meeting of Ragged School teachers, declared his conviction that the School Board has failed to take charge of the children for whose benefit it was popularly supposed to have been called into existence. The Ragged School had for many years supplied what is now, it is to be feared, once more a missing link in our national system of education, and there is, therefore, ample scope for such an enterprise as that just referred to.

Although the aim of this article is rather to chronicle what

has been done than to suggest that which might be done, the experience of another year demands some reference to the great want which exists of Homes for the Incurable. In the majority of the London hospitals, when the medical officers declare a case to be hopeless the friends of the patient, unless he is absolutely unfit to be moved, are required to take him away, and he is thus thrown back upon their hands when he most sorely needs medical treatment and nursing. The course thus adopted is in perfect keeping with the law which decrees the survival of the fittest, and which puts aside those whose race is nearly run in order to make way for those who are only temporarily incapacitated, but it involves hardship nevertheless, and in these days of widespread philanthropic enterprise, it may be of some service to call attention to the want which really exists. The only general homes for incurables are the Royal Hospital at Putney, the British Home at Clapham Road, and the St. John the Evangelist's National Hospital at Cowley. In the first two of these admission is by election, and the number of inmates is 250, while in the third the number of patients is only 12. The smaller homes, which are mainly for females, would add but little to the list of available places, and thus an incurable is in reality outside the area of charitable effort. That this should be the case when many thousands are annually spent upon far less worthy objects is a matter for surprise and regret.

The enquiry into the Parochial Charities of the City of London to the results of which, as embodied in the Blue Book published by the Commissioners, reference was made in the "Companion" for last year, has so far borne no fruit; but if domestic legislation receives its due share of attention in 1883, this will probably form the subject of one of the measures introduced. If, at the same time, some legislation could be adopted for the compulsory registration of all charitable societies and for the annual production of accounts on the system in force in regard to Friendly Societies, it would afford a safeguard to the benevolent, and would result in the extirpation of some of the worthless societies which exist only for the sake of their officials. In a paper read by Mr. Loch, the Secretary of the Charity Organization Society, in the spring, the need for some such enforced rendering of accounts was illustrated by a few typical cases. In one home for children, dealing with about 700*l.* a year, the management is entirely in the hands of a lady superintendent. The number of inmates in the home is not

mentioned in the report. In another home for orphans, dealing annually with a sum of 3,000*l.*, and lodging more than 200 children, there is a lady superintendent with trustees—but the management appears to be entirely in the hands of the former, and there is no visiting or other committee. Another special home, for persons in sickness, publishes a two years' balance sheet. The income for that period is 900*l.*; there are two physicians, but the management is entirely in the hands of a matron-secretary. Even more striking cases might be cited, as for example, the institutions advertised by the Charity Organization Society in the *Times* and other journals as being utterly unworthy of support, but which, nevertheless, contrive to maintain a flourishing existence and to support secretaries and other officials. The record of a year's work of the Charity Organization Society affords a clear indication of the value of such a body, even if in some cases its action may appear to be hard. In the year 1881, 26,052 cases came before the District Committees of the Society. Of these 11,175 were dismissed as not requiring relief, undeserving, cases for the poor-law, or otherwise ineligible. In considering these figures, it must be borne in mind that as much labour is often expended upon cases ultimately dismissed as upon those assisted, while in some instances there has been expenditure pending the completion of inquiry, even in cases afterwards dismissed. 5,496 cases were referred to the guardians, local agencies, or private persons; and 9,381 were, in the absence of suitable assistance obtainable from other sources, directly assisted with grants, loans, employment, or hospital letters. In addition, 10,079 vagrants were dealt with by the various committees, 9,971 reports sent uot, and 10,821 inquiries made for other committees. From the offices of the Council 1,213 old and new reports on institutions, and 556 on individual cases, were sent out during the year. The general or propagandist work of the Society has been of a varied character. A report has been published by its Special Committee on Artisans' Dwellings, and Special Committees have considered the questions of Industrial Insurance and Convalescent Homes. Various pamphlets have been issued, and a Register and Digest of Charities, with an Introductory Essay on "How to Help Cases of Distress," published.

TABLE OF ALL THE PUBLIC GENERAL ACTS

PASSED IN THE THIRD SESSION OF THE TWENTY-SECOND PARLIAMENT OF GREAT BRITAIN AND IRELAND.

45 & 46 VICTORIA. A.D. 1882.

(The Acts are given in the order in which they were passed, the number denoting the chapter. An abstract of those Acts distinguished by an asterisk is given in the pages following this table, which contain a classified epitome of the more important statutes passed during the session.)

1. An Act to apply the sum of £313,270 out of the Consolidated Fund to the service of the year ending on the 31st of March, 1882.

*2. An Act to authorise the use of Reply Post Cards.

*3. An Act to amend the Law relating to the use of Gunpowder in Slate Mines.

(Provides for exemption of slate mines from certain regulations as to use of explosives contained in s. 23 of 35 & 36 Vict. c. 77; Metalliferous Mines Regulation Act, 1872.)

4. An Act to apply certain sums (£424,844 14*s.* 10*d.* and £6,793,498) out of the Consolidated Fund to the service of the years ending on the 31st March, 1881, 1882, and 1883.

*5. An Act to enable Her Majesty to provide for the Establishment of His Royal Highness the Duke of Albany and Her Serene Highness Princess Helen Frederica Augusta of Waldeck and Pyrmont, and to settle an annuity on Her Serene Highness.

(Grants additional annuity of £10,000 for life to Duke of Albany.)

6. An Act to amend the Law in regard to householders under the General Police and Improvement Acts in Scotland.

(Repeals section 3 of 31 and 32 Vict. c. 102; General Police and Improvement (Scotland) Act, 1862, Amendment Act.)

7. An Act to provide during twelve months for the Discipline and Regulation of the Army.

(Continues and amends 44 & 45 Vict. c. 58; Army Act 1881.)

8. An Act to apply the sum of £9,282,435 out of the Consolidated Fund to the service of the year ending on the 31st March, 1883.

*9. An Act to amend the Documentary Evidence Act, 1868, and other enactments relating to the evidence of documents by means of copies printed by the Government Printers.

(Amends 31 & 32 Vict. c. 37; Documentary Evidence Act, 1868.)

10. An Act for making provision for facilitating the manœuvres of Troops to be assembled during the present Summer.

(Applies 44 & 45 Vict. c. 58; Army Act, 1881.)

11. An Act to amend the Public Health (Scotland) Act, 1867.

(Repeals 42 & 43 Vict. c. 15, Public Health (Scotland) Act, 1867; Amendment Act, 1879.
Construes Act with 30 & 31 Vict. c. 101; Public Health (Scotland) Act, 1867.)

*12. An Act to amend the Law relating to the application of moneys arising from the sale of Militia Storehouses.

(Repeals part of section 3 of 17 & 18 Vict. c. 105; Militia Law Amendment Act, 1854.)

13. An Act for the Improvement of Arklow Harbour.

(Preamble recites 32 Geo. 3, c. 24 (I.) and 26 & 27 Vict. c. ccix.
Incorporates parts of 10 & 11 Vict. c. 16; Commissioners Clauses Act, 1847, and parts of 10 and 11 Vict. c. 27; Harbours, Docks, and Piers Clauses Act, 1847.)

14. An Act to confer further powers upon the Metropolitan Board of Works with respect to Streets and Buildings in the Metropolis.

(Amends and applies 18 & 19 Vict. c. 120; Metropolis Management Act, 1855.
" " 18 & 19 Vict. c. 122; Metropolitan Building Act, 1855.
Applies 25 and 26 Vict. c. 102; Metropolis Management Amendment Act, 1862.)

*15. An Act to provide for the better application of Moneys paid by way of Compensation for the compulsory acquisition of Common Lands and extinguishment of Rights of Common.

(Amends 8 & 9 Vict. c. 18, Lands Clauses Consolidation Act, 1845.
" 15 & 16 Vict. c. 79; } Inclosure Acts, 1852 and 1854.
" 17 & 18 Vict. c. 97; }
Applies Inclosure Acts, 1845 to 1878.
" 42 & 43 Vict. c. 37; Commons Act, 1879.)

16. An Act to amend the Irish Reproductive Loan Fund Act, 1874.

(Repeals clauses 2 & 3 of section 5 of 37 & 38 Vict. c. 86; Irish Reproductive Loan Fund Act, 1874.
Applies 22 Vict. c. 14; Manor Courts, &c. (Ireland) Act, 1859.)

17. An Act for the transfer of Property in Ireland held for the Service of Her Majesty's Customs and of the Inland Revenue to the Commissioners of Public Works in Ireland; and for other purposes relating thereto.

(Applies 32 & 33 Vict. c. 74; Public Works (Ireland) Act, 1869.
" (with modifications) s. 275 of 39 & 40 Vict. c. 36; Customs Consolidation Act, 1876.
(Incorporates 8 & 9 Vict. c. 18;
" 23 & 24 Vict. c. 106;
" 14 & 15 Vict. c. 70; } Lands Clauses Consolidation (Ireland) Acts, 1845 to 1868.
" 23 & 24 Vict. c. 97;
" 27 & 28 Vict. c. 71;
" 31 & 32 Vict. c. 70;
Affects 16 & 17 Vict. c. 107; } Customs Consolidation Acts, 1853 and 1876.
" 39 & 40 Vict. c. 36; }
" 42 & 43 Vict. c. 36; Customs Buildings Act, 1879.

18. An Act to regulate the procedure of School Boards in Scotland in the dismissal of Teachers.

(Applies 35 & 36 Vict. c. 62; Education (Scotland) Act, 1872.)

*19. An Act to amend the Law relating to the interment of any person found *felo de se*.

(Repeals 4 Geo. 4, c. 52; Felo de se Act, 1823.
Applies 43 & 44 Vict. c. 41; Burial Laws Amendment Act, 1880.)

*20. An Act to amend the Poor Rate Assessment and Collection Act, 1869.

(Amends 32 & 33 Vict. c. 41; Poor Rate Assessment and Collection Act, 1869.)

*21. An Act to amend the Places of Worship Sites Act, 1873.

(Amends 36 & 37 Vict. c. 50; Places of Worship Sites Act, 1873.
Applies 5 & 6 Will. 4 c. 69; Workhouse Property Act, 1835.)

*22. An Act to make better provision for Inquiries with regard to Boiler Explosions.

(Applies, in England, the Summary Jurisdiction Acts.
" in Scotland, 27 & 28 Vict. c. 53, and 44 & 45 Vict. c. 33; Summary Jurisdiction Acts, 1864 and 1881.
" in Ireland, 14 & 15 Vict. c. 93; Petty Sessions (Ireland) Act, 1851, &c.)

*23. An Act to extend the Public Health Act, 1875, to the making of Byelaws for Fruit Pickers.

(Amends section 314 of 38 & 39 Vict. c. 55; Public Health Act, 1875.)

24. An Act to amend the Petty Sessions (Ireland) Act, 1851.

(Amends 14 & 15 Vict. c. 93; Petty Sessions (Ireland) Act, 1851.)

*25. An Act for the prevention of Crime in Ireland.

(Applies 40 & 41 Vict. c. 57; Supreme Court of Judicature (Ireland) Act, 1877.
,, 39 & 40 Vict. c. 78; Juries Procedure (Ireland) Act, 1876.
,, 14 & 15 Vict. c. 93; Petty Sessions (Ireland) Act, 1851.
,, section 39 of 33 Vict. c. 9; Peace Preservation (Ireland) Act, 1870.
,, 44 & 45 Vict. c. 5; Peace Preservation (Ireland) Act, 1881.
Re-enacts (with certain provisoes) 11 & 12 Vict. c. 20; Alien Act, 1848.)

*26. An Act to amend the Law relating to the election of Lords Temporal to serve in Parliament for Ireland.

(Amends 39 & 40 Geo. 3, c. 67; Act of Union of Great Britain and Ireland.)

*27. An Act to extend certain Provisions of the Poor Rate Assessment and Collection Act, 1869, to the Highway Rate, and for other purposes.

(Extends certain provisions of 32 & 33 Vict. 41 (Poor Rate Assessment and Collection Act, 1869) to the Highway Rate.
Repeals section 30 of 5 & 6 Will. 4, c. 50; Highway Act, 1835.
Applies 27 & 28 Vict. c. 39; Union Assessment Committee Amendment Act, 1864.)
,, 41 & 42 Vict. c. 77; Highways and Locomotives (Amendment) Act, 1878.
,, 38 & 39 Vict. c. 55; Public Health Act, 1875.)

28. An Act to apply the sum of £5,703,891 out of the Consolidated Fund to the service of the year ending on the 31st March, 1883.

29. An Act to amend the Acts relating to the County Courts in Ireland, and to make better provision for Appeals under the said Acts.

(Applies 40 & 41 Vict. c. 56; County Officers and Courts (Ireland) Act, 1877.
,, 14 & 15 Vict. c. 57; Civil Bills, &c. (Ireland) Act, 1851.
Repeals sections 127, 128, 129, and 130 of 14 & 15 Vict. c. 57; Civil Bills, &c. (Ireland) Act, 1851.
,, section 55 of 40 & 41 Vict. c. 56; County Officers and Courts (Ireland) Act 1877.
Extends jurisdiction of County Courts under 40 & 41 Vict. c. 56 s. 33.)

*30. An Act to amend the Baths and Wash-houses Acts.

(Amends sections 24 & 27 of 9 & 10 Vict. c. 74; Public Baths and Wash-houses Act, 1846.)

*31. An Act to render Judgments obtained in certain Inferior Courts in England, Scotland, and Ireland respectively, effectual in any other part of the United Kingdom.

(Applies 31 & 32 Vict. c. 54; Judgments Extension Act, 1868.
,, (as to making, &c., of rules) County Courts Acts, England; Sheriffs Courts Acts, Scotland; and Civil Bill Courts Acts, Ireland.)

32. An Act for the acquisition of property and the provision of new Buildings for the Admiralty and War Office.

(Applies 8 & 9 Vict. c. 18; } Lands Clauses Consolidation Acts, 1845, 1860, and 1869.
,, 23 & 24 Vict. c. 106; }
,, 32 & 33 Vict. c. 18; }
,, 15 & 16 Vict. c. 28; Public Works Act, 1852.
,, Summary Jurisdiction Acts.
Exempts buildings from operations of 18 & 19 Vict. c. 122; Metropolitan Buildings Act, 1855.)

33. An Act further to amend the Acts relating to the raising of

Money by the Metropolitan Board of Works; and for other purposes.

(Amends 38 & 39 Vict. c. 65; } Metropolitan Board of Works (Money) Acts,
,, 44 & 45 Vict. c. 48; } 1875 and 1881.
,, 32 & 33 Vict. c. 102; Metropolitan Board of Works (Loans) Act, 1869.
Applies Metropolitan Board of Works (Loans) Acts, 1869 to 1871.
,, Metropolitan Board of Works (Money) Acts, 1875 to 1881.
,, 18 & 19 Vict. c. 120; Metropolis Management Act, 1855.
Empowers Board to expend Moneys for purposes described in the Schedules.
Applies 24 and 25 Vict. c. 98; as to forgery of Metropolitan Bills.)

*34. An Act to amend "The Beer Dealers' Retail Licences Act, 1880."

(Amends 43 Vict. c. 6; Beer Dealers' Retail Licences Act, 1880.
Extends 32 & 33 Vict. c. 27; Wine and Beerhouse Act, 1869.
Applies 35 & 36 Vict. c. 94; Licensing Act, 1872.)

*35. An Act to amend so much of "The Friendly Societies Act, 1875," as relates to quinquennial returns of sickness and mortality.

(Repeals part of 38 & 39 Vict. c. 60; Friendly Societies Act, 1875.)

*36. An Act to amend the Pauper Inmates Discharge and Regulation Act, 1871.

(Amends 34 & 35 Vict. c. 108; Pauper Inmates Discharge and Regulation Act, 1871.
Applies 30 & 31 Vict. c. 6; Metropolitan Poor Act, 1867.
,, 5 Geo. 4, c. 83; Rogues and Vagabonds.)

*37. An Act to amend the Law respecting the obtaining of Corn Returns.

(Repeals 5 & 6 Vict. c. 14; Corn Importation Act, 1842.
,, 27 & 28 Vict. c. 87; Corn Returns Act, 1864.
,, section 56 of 6 & 7 Will. 4, c. 71; Commutation of Tithes Act, 1836.
Applies 41 & 42 Vict. c. 49; Weights and Measures Act, 1878.
,, 42 & 43 Vict. c. 49, &c.; Summary Jurisdiction Acts.)

38. An Act for facilitating Sales, Leases, and other dispositions of Settled Land, and for promoting the execution of Improvements thereon.

(Repeals (in part) 23 & 24 Vict. c. 145; Trustees, &c. Act, 1860.
,, ,, 27 & 28 Vict. c. 114; Improvement of Land Act, 1864.
,, ,, 40 & 41 Vict. c. 18; Settled Estates Act, 1877.
Applies 39 & 40 Vict. c. 59; Appellate Jurisdiction Act, 1876.
,, ,, 44 & 45 Vict. c. 68; Supreme Court of Judicature Act, 1881.
,, ,, 40 & 41 Vict. c. 57; Supreme Court of Judicature (Ireland) Act, 1877.
,, ,, 40 & 41 Vict. c. 56; County Officers and Courts (Ireland) Act, 1877.)

39. An Act for further improving the Practice of Conveyancing; and for other purposes.

(Amends, and applies, 44 & 45 Vict. c. 41; Conveyancing Act, 1881.
Repeals 17 & 18 Vict. c. 75; Acknowledgment of Deeds by Married Women Act, 1854.
,, 41 & 42 Vict. c. 23; Acknowledgment of Deeds by Married Women (Ireland) Act, 1878.
,, (in part) 3 & 4 Will., 4, c. 74; Fines and Recoveries Act, 1833.
,, ,, 4 & 5 Will. 4, c. 92; Fines and Recoveries (Ireland) Act, 1834.
Applies 39 & 40 Vict. c. 59; Appellate Jurisdiction Act, 1876.
,, 44 & 45 Vict. c. 68; Supreme Court of Judicature Act, 1881.
,, 40 & 41 Vict. c. 57; Supreme Court of Judicature (Ireland) Act, 1877.)

*40. An Act to amend the Law of Copyright relating to Musical Compositions.

(Amends 3 & 4 Will. 4, c. 15; as to Costs in Actions, &c.)

*41. An Act to grant certain Duties of Customs and Inland Revenue, to alter other Duties, and to amend the Laws relating to Customs and Inland Reveue.

(Grants Import Duties on Tea.
Repeals custom duties under 39 & 40 Vict. c. 35 (Customs Tariff Act, 1876) on vegetable matter other than chicory.
" excise duty under 35 & 36 Vict. c. 20 (Customs, &c., Act, 1872) on vegetable matter other than chicory.
Grants duty on imitations of coffee, &c.; Applies 33 & 34 Vict. c. 98; Stamp Duties Act, 1870; Repeals section 5 of 43 Geo. 3, c. 129.
" duties of Income Tax, and applies former Acts (except section 22 of 44 & 45 Vict. c. 12.)

42. An Act to amend the Law relating to Civil Imprisonment in Scotland.

(Construes Act with 43 & 44 Vict. c. 34; Debtors (Scotland) Act, 1880; and 44 & 45 Vict. c. 22; Bankruptcy, &c. (Scotland) Act, 1881.)

*43. An Act to amend the Bills of Sale Act, 1878.

(Amends 41 & 42 Vict. c. 31; Bills of Sale Act, 1878.
Applies section 60 of 32 & 33 Vict. c. 71; Bankruptcy Act, 1869.)

*44. An Act to authorise the Commutation of a portion of a Pension in pursuance of the Pensions Commutation Act, 1871.

(Amends 34 & 35 Vict. c. 36; Pensions Commutation Act, 1871.)

45. An Act to make provision for the transfer of the Assets and Liabilities of the Provident Branch of the Bombay Civil Fund and other funds to the Secretary of State for India in Council.

46. An Act to amend the Isle of Man (Officers) Act, 1876.

(Amends 39 & 40 Vict. c. 43; Isle of Man (Officers) Act, 1876.
Applies 22 Vict. c. 26; Superannuation Act, 1859.)

47. An Act to make provision respecting certain Arrears of Rent in Ireland.

(Applies 44 & 45 Vict. c. 49; Land Law (Ireland) Act, 1881.
" 23 & 24 Vict. c. 154; Landlord and Tenant (Ireland) Act, 1860.
" 33 & 34 Vict. c. 46; Landlord and Tenant (Ireland) Act, 1870.
" 44 & 45 Vict. c. 71; Irish Church Act Amendment Act, 1881.
" 12 & 13 Vict. c. 104; Poor Law (Ireland) Act, 1849 (as to Emigration.)

48. An Act to consolidate the Acts relating to the Reserve Forces.

(Repeals 30 & 31 Vict. c. 110; Reserve Force Act, 1867.
" 30 & 31 Vict. c. 111; Militia Reserve Act, 1867.
" part of 33 & 34 Vict. c. 67; Army Enlistment Act, 1870.
" " 34 & 35 Vict. c. 86; } Regulation of the Forces Acts, 1871 and
" " 44 & 45 Vict. c. 57; } 1881.
" " 36 & 37 Vict. c. 68; Militia Service Act, 1873.
" " 41 & 42 Vict. c. 10; Mutiny Act, 1878.
" " 42 & 43 Vict. cc 32, 33; Army Discipline Acts, 1879.
" " 44 & 45 Vict. c. 58; Army Act, 1881.)

49. An Act to consolidate the Acts relating to the Militia.

(Re-enacts (with certain modifications) 38 & 39 Vict. c. 69; Militia (Voluntary Enlistment) Act, 1875.
Applies 44 & 45 Vict. c. 58; Army Act, 1881.
Re-enacts certain Enactments in 33 & 34 Vict. c. 67, and 34 & 35 Vict. c. 86; with respect to Local Militia.
(Repeals the several Acts and portions of Acts described in the Second Schedule.)

50. An Act for consolidating, with Amendments, enactments relating to Municipal Corporations in England and Wales.

(Repeals the several Acts and portions of Acts described in the First Schedule.
Applies this Act to every City and Town to which 5 & 6 Will. 4, c. 76 (Municipal Corporations Act, 1835) applies, &c.

Applies 41 & 42 Vict. c. 26; Parliamentary and Municipal Registration Act, 1878.
" 35 & 36 Vict. c. 33; Ballot Act, 1872.
" 31 & 32 Vict. c. 125; Parliamentary Elections Act, 1868.
" 8 & 9 Vict. c. 18: } Lands Clauses Consolidation Acts, 1845, 1860, and
" 23 & 24 Vict. c. 106; } 1869.
" 32 & 33 Vict. c. 18; }
" 24 & 25 Vict. c. 96, s. 75; Larceny Act, 1861.
" 38 & 39 Vict. c. 89, s. 40; Public Works Loans Act, 1875.
" 16 & 17 Vict. c. 137, s. 65; Charitable Trusts Act, 1853.
" 38 & 39 Vict. c. 55; Public Health Act, 1875.
" 38 Geo. 3, c. 52, Trial of Offences in Cities, &c.
" 1 & 2 Will. 4, c. 41; Appointment of Special Constables.
" 24 & 25 Vict. c. 47; Harbours and Passing Tolls Act, 1861.
" 3 Geo. 4, c. 46; Return and Levying of Fines, Forfeitures, &c.
" 31 & 32 Vict. c. 72; Promissory Oaths Act, 1868.
" 30 & 31 Vict. c. 102; Representation of the People Act, 1867.
" 9 Geo. 4, c. 61; Licences to Innkeepers, &c.)

*51. An Act to extend the Acts relating to the purchase of small Government Annuities and to assuring payments of money on death.

(Repeals (in part) 16 & 17 Vict. c. 45, and 27 & 28 Vict. c. 43; Government Annuities Acts, 1853 and 1864.
Construes Act with 27 & 28 Vict. c. 43.
Applies 27 & 28 Vict. c. 46; Government Annuities (Investments) Act, 1864.
" 38 & 39 Vict. c. 60; Friendly Societies Act, 1875.)

52. An Act to continue certain Turnpike Acts, and to repeal certain other Turnpike Acts; and for other purposes connected therewith.

(Repeals and continues Local Acts as set forth in Schedule.)

53. An Act to amend the Law of Entail in Scotland.

(Defines "Entail Acts" as set out in Schedule.
Applies 11 & 12 Vict. c. 36; } Entail Amendment Acts, 1848, 1868, 1875, and
" 31 & 32 Vict. c. 84; } 1878.
" 38 & 39 Vict. c. 61; }
" 41 & 42 Vict. c. 28; }
" 44 & 45 Vict. c. 47; Presumption of Life Limitation (Scotland) Act, 1881.)

*54. An Act to amend the Artizans and Labourers' Dwellings Acts.

(Amends 38 & 39 Vict. c. 36; } Artizans and Labourers' Dwellings Acts,
" 42 & 43 Vict. cc. 63, 64; } 1875 and 1879.
Applies 8 & 9 Vict. c. 18; Lands Clauses Act, 1845.
" 31 & 32 Vict. c. 130; Artizans and Labourers' Dwellings Act, 1868.
" 38 & 39 Vict. c. 55; Public Health Act, 1855.)

55. An Act to amend the Law with respect to the Charges on and Payments to the Mercantile Marine Fund, and to Expenses of Prosecutions for Offences committed at Sea.

(Construes Act with Merchant Shipping Acts, 1854 to 1880.
Repeals (in part) 17 & 18 Vict. c. 104; } Merchant Shipping Acts, 1854 and 1876.
" " 39 & 40 Vict. c. 80; }
" section 27 of 7 Geo. 4, c. 64; Administration of Criminal Justice.
" part of section 22 of 4 & 5 Will. 4, c. 36; Central Criminal Act.
" part of section 1 of 7 & 8 Vict. 2; Trial of Offences on the High Seas.
" 40 & 41 Vict. c. 44; Superannuation (Mercantile Marine Fund Officers) Act, 1877.
Applies 18 & 19 Vict. c. 119; Passengers Act, 1855.
" 45 & 46 Vict. c. 22; Boiler Explosions Act, 1882.
" 29 & 30 Vict. c. 39; Exchequer and Audit Act, 1866.)

*56. An Act to facilitate and regulate the supply of Electricity for Lighting and other purposes in Great Britain and Ireland.

(Applies 38 & 39 Vict. c. 55; Public Health Act, 1875.
" 41 & 42 Vict. c. 52; Public Health (Ireland) Act, 1878.
" 38 & 39 Vict. c. 83; Local Loans Act, 1875.

Applies 10 & 11 Vict. c. 15; 34 & 35 Vict. c. 41; } Gasworks Clauses Acts, 1847 and 1871.
" 37 & 38 Vict. c. 40; Board of Trade Arbitrations Act, 1874.
" 32 & 33 Vict. c. 73; 41 & 42 Vict. c. 76; } Telegraph Acts, 1869 and 1878.
" 8 & 9 Vict. cc. 18, 19; 23 & 24 Vict. c. 106; 32 & 33 Vict. c. 18; } Lands Clauses Acts, 1845, 1860, and 1869.)

*57. An Act to amend the law relating to Costs and Salaries in County Courts.

(Repeals part of section 91 of 9 & 10 Vict. c. 95; part of section 2 of 29 & 30 Vict. c. 14; } County Courts Acts, 1846, 1866, and 1867.)
Amends section 5 of 30 & 31 Vict. c. 142;

*58. An Act to amend the Divided Parishes and Poor Law Amendment Act, 1876; and for other purposes.

(Repeals in part 20 Vict. c. 19; Poor Law Act, 1857.
" " 4 & 5 Will. 4, c. 76; Poor Law Act, 1834.
" " 5 & 6 Will. 4, c. 69; Union and Parish Property Act, 1835.
" " 5 & 6 Vict. c. 18; Parish Property, &c., Act, 1842.
Amends 39 & 40 Vict. c. 61; Divided Parishes, &c., Act, 1876.
" section 1 of 25 & 26 Vict. c. 43; Poor Law Act, 1862.
Applies 42 & 43 Vict. c. 54; Poor Law Act, 1879.)

59. An Act to reorganise the Educational Endowments of Scotland.

(Applies 41 & 42 Vict. c. 48; Endowed Institutions (Scotland) Act, 1878.
" 31 & 32 Vict. c. 100; Court of Session Act, 1868.)

60. An Act to amend and extend the provisions of the Land Law (Ireland) Act, 1881, relating to Labourers' Cottages and Allotments.

(Amends 44 & 45 Vict. c. 49; Land Law (Ireland) Act, 1881.
Applies 14 & 15 Vict. c. 93; Petty Sessions (Ireland) Act, 1851.)

61. An Act to codify the Law relating to Bills of Exchange, Cheques, and Promissory Notes.

(Repeals the several Acts and portions of Acts described in the Second Schedule.
Applies 34 & 35 Vict. c. 17; Bank Holidays Act, 1871.)

62. An Act to grant Money for the purpose of Loans by the Public Works Loan Commissioners and the Commissioners of Public Works in Ireland and the Irish Land Commission; and for other purposes relating to Loans by those Commissioners.

(Grants £3,000,000 for Public Works, and £1,200,000 for Public Works in Ireland, during period ending 30th June, 1883.
Grants £400,000 to Irish Land Commission under 44 & 45 Vict. c. 49.
Borrowing powers for purposes of 45 & 46 Vict. c. 47; Arrears of Rent (Ireland) Act, 1882; Applies 44 & 45 Vict. c. 71; Irish Church Act Amendment Act, 1881.
Amends 24 & 25 Vict. c. 45; General Pier and Harbour Act, 1861.
Repeals section 13 of 38 & 39 Vict. c. 89; Public Works Loans Act, 1875.
" section 11 of 40 & 41 Vict. c. 27; Public Works Loans (Ireland) Act, 1877.
Amends section 28 of 44 & 45 Vict. c. 49; Land Law (Ireland) Act, 1881.
Applies 38 & 39 Vict. c. 55; Public Health Act, 1875.
" 41 & 42 Vict. c. 52; Public Health (Ireland) Act, 1878.
" 25 & 26 Vict. c. 101; General Police and Improvement (Scotland) Act, 1862.
Postpones payment of debt due from Trustees of Pulteney Harbour at Wick.)

63. An Act to amend the Acts regulating the pay of certain officers of the Royal Irish Constabulary Force, and for other purposes connected therewith.

(Amends 37 & 38 Vict. c. 80; Constabulary (Ireland) Act, 1874.)

64. An Act to continue various expiring Laws.

(Continues (as in Schedule) the following Acts, and Acts amending the same, viz :—
5 & 6 Will. 4, c. 27; Linen, &c., Manufactures (Ireland).
3 & 4 Vict. c. 89; Poor Rates (Stock in Trade Exemption).
4 & 5 Vict. c. 35; Copyhold, &c., Commissions.
4 & 5 Vict. c. 59; Application of Highway Rates to Turnpike Roads.
10 & 11 Vict. c. 32; Landed Property Improvement (Ireland).
10 & 11 Vict. c. 98; Ecclesiastical Jurisdiction.
11 & 12 Vict. c. 32; County Cess (Ireland).
14 & 15 Vict. c. 104; Episcopal, &c., Estates.
17 & 18 Vict. c. 102; Corrupt Practices Prevention.
23 & 24 Vict. c. 19; Dwellings for Labouring Classes (Ireland).
24 & 25 Vict. c. 109; Salmon Fishery (England).
26 & 27 Vict. c. 105; Promissory Notes.
27 & 28 Vict. c. 20; Promissory Notes, &c. (Ireland).
28 & 29 Vict. c. 46; Militia Ballots Suspension.
28 & 29 Vict. c. 83; Locomotives on Roads.
29 & 30 Vict. c. 52; Prosecution Expenses.
31 & 32 Vict. c. 125; Election Petitions and Corrupt Practices.
32 & 33 Vict. c. 21; Election Commissioners' Expenses.
32 & 33 Vict. c. 56; Endowed Schools (Schemes).
34 & 35 Vict. c. 87; Sunday Observance Prosecutions.
35 & 36 Vict. c 33; Parliamentary and Municipal Elections (Ballot).
36 & 37 Vict. c. 48; Regulation of Railways.
38 & 39 Vict. c. 48; Police Expenses.
38 & 39 Vict. c. 84; Returning Officers' Expenses.
39 & 40 Vict. c. 21; Juries (Ireland).
41 & 42 Vict. c. 41; Returning Officers' Expenses (Scotland).
41 & 42 Vict. c. 72; Sale of Liquors on Sunday (Ireland).
43 Vict. c. 18; Parliamentary Elections.)

65. An Act to make provision respecting certain Prison Charities.

(Applies 16 & 17 Vict. c. 137, &c.; Charitable Trusts Acts, 1853 to 1869.)

66. An Act to amend the Law relating to Licences to retail Intoxicating Liquors on Passenger Vessels in Scotland.

(Amends 9 Geo. 4, c. 47; section 10 of 4 & 5 Will. 4, c. 75; and section 45 of 43 & 44 Vict. c. 20; (Inland Revenue Act, 1880) as to sale of intoxicating liquors on Sundays on board Passenger Vessels in Scotland.)

67. An Act to further amend the Law relating to Turnpike Roads in South Wales.

(Repeals (in part) 7 & 8 Vict. c. 91; South Wales Turnpike Trusts Act, 1844.
Applies 23 & 24 Vict. c. 51; 40 & 41 Vict. c. 66; } Local Taxation Returns Acts, 1860 and 1877.)

*68. An Act to suspend for a limited period, on account of Corrupt Practices, the holding of an Election of a Member or Members to serve in Parliament for certain cities and boroughs.

(Suspends Elections for Boston, Canterbury, Chester, Gloucester, Macclesfield, Oxford, and Sandwich.)

69. An Act to amend the Intermediate Education (Ireland) Act, 1878.

(Amends 41 & 42 Vict. c. 66; Intermediate Education (Ireland) Act, 1878.)

70. An Act to amend the Supreme Court of Judicature Act (Ireland), 1877.

(Amends 40 & 41 Vict. c. 57; Supreme Court of Judicature Act (Ireland), 1877.)

71. An Act to apply a sum out of the Consolidated Fund to the service of the year ending on the 31st March, 1883, and to appropriate the Supplies granted in this Session of Parliament.

72. An Act for amending the Laws relating to Customs and Inland Revenue, and Postage and other Stamps, and for making further.

provision respecting the National Debt and charges payable out of the public revenue or by the Commissioners for the Reduction of the National Debt; and for other purposes.

*73. An Act for the better protection of Ancient Monuments.

(Applies 42 & 43 Vict. c. 49; Summary Jurisdiction Act, 1879.
" 27 & 28 Vict. c. 53; } Summary Jurisdiction (Scotland) Acts, 1864 and
" 44 & 45 Vict. c. 33; } 1881.
" 14 & 15 Vict. c. 93; Petty Sessions (Ireland) Act, 1851.
" 8 & 9 Vict. cc. 18, 19; Lands Clauses Acts, 1845.)

*74. An Act to amend the Post Office Acts with respect to the Conveyance of Parcels.

(Applies 22 & 23 Vict. c. 59; Railway Companies Arbitration Act, 1859.
" Post Office Acts, 7 Will. 4, and 1 Vict. c. 36, &c.
" 13 & 14 Vict. c. 33; Railway Clearing Act, 1850.)

75. An Act to consolidate and amend the Acts relating to the Property of Married Women.

(Repeals 33 & 34 Vict. c. 93; } Married Women's Property Acts, 1870 and 1874.
" 37 & 38 Vict. c. 50; }
Applies 13 & 14 Vict. c. 60; Trustee Act, 1850.
" 31 & 32 Vict. c. 122; Poor Law Amendment Act, 1868.)

76. An Act to amend the Merchant Shipping Acts, 1854 to 1880, with respect to Colonial Courts of Inquiry.

(Amends 17 & 18 Vict. c. 104, &c.; Merchant Shipping Acts, 1854 to 1880.
Repeals part of section 242 of 17 & 18 Vict. c. 104.
Applies 25 & 26 Vict. c. 63; Merchant Shipping Act Amendment Act, 1862.
" 32 & 33 Vict. c. 11; Merchant Shipping Colonial Act, 1869.
" 39 & 40 Vict. c. 80; Merchant Shipping Act, 1876.)

77. An Act to amend the Law of Citation in Scotland.

(Amends 34 & 35 Vict. c. 42; Citation Amendment (Scotland) Act, 1871.)

78. An Act to establish a Fishery Board for Scotland.

(Defines the "Herring Fishery Acts," as set out in First Schedule.
Defines the "Salmon Fishery Acts," as set out in Second Schedule.
Applies 31 & 32 Vict. c. 45; } Sea Fishery Acts, 1868 and 1875.
" 38 & 39 Vict. c. 15; }
Exempts River Tweed as defined by 22 & 23 Vict. c. 70; Tweed Fisheries Amendment Act, 1859.)

79. An Act to make provision for the arrangement of Accounts between the Commissioners of Her Majesty's Treasury and the Secretary of State in Council of India in respect of certain Home Charges for Her Majesty's Forces serving in India.

(Provides for arrangement of Accounts between Commissioners of the Treasury and Secretary of State in Council of India.)

80. An Act for the extension of Allotments.

(Amends 2 & 3 Will. 4, c. 42; Poor Relief Act, 1832.
" 36 & 37 Vict. c. 19; Poor Allotments Management Act, 1873.
Applies 8 & 9 Vict. c. 118; Inclosure Act, 1845.)

81. An Act for disannexing the Rectory of Somersham from the office of Regius Professor of Divinity in the University of Cambridge, and for making better provision for the cure of Souls within the said Rectory; and for other purposes.

(Recites Letters Patent of King James the First, and Act of 10th year of Queen Anne.
Disannexes Rectory from Regius Professorship of Divinity, and vests same in University of Cambridge.)

82. An Act for amending the Lunacy Regulation Acts.

(Amends 16 & 17 Vict. c. 70; } Lunacy Regulation Acts, 1853 and 1862.)
" 25 & 26 Vict. c. 86; }

ABSTRACTS OF IMPORTANT ACTS

PASSED IN THE THIRD SESSION OF THE TWENTY-SECOND PARLIAMENT OF GREAT BRITAIN AND IRELAND.

1. ECCLESIASTICAL.

SITES FOR PLACES OF WORSHIP AND BURIAL PLACES.

[45 & 46 Victoriæ, cap. 21.—12th July, 1882.]

An Act to amend the Places of Worship Sites Act.

The preamble declares the desirability of removing the doubts which have arisen whether corporations and public bodies can make conveyances of pieces of land not exceeding in quantity one acre for sites for places of religious worship and for burial places under the facilities afforded by "The Places of Worship Sites Act, 1873," and also recites that it is desirable to grant increased facilities for making such conveyances in cases where tenants for life are unable to make them under the Act, because the person next entitled to the manor or lands for a beneficial interest in fee simple or fee tail is unborn or unascertained. Section 1 extends "The Places of Worship Sites Act" so as to authorise any corporation, ecclesiastical or lay, sole or aggregate, and any officers, justices of the peace, trustees, or commissioners holding land for public, ecclesiastical, parochial, charitable, or other purposes or objects, to grant, convey, or enfranchise for the purposes of the Act such quantity of land as is therein mentioned, provided (*a*) that an ecclesiastical corporation sole, being below the dignity of a bishop, shall not make any such grant without the consent in writing of the bishop of the diocese to whose jurisdiction he is subject; (*b*) that a municipal corporation shall not make any such grant without the consent in writing of the Commissioners of Her Majesty's Treasury; (*c*) that parochial property shall not be so granted without the consent of a majority of the ratepayers and owners of property in the parish to which the property belongs, assembled at a meeting to be convened according to the mode pointed out in the Act 5 and 6 Will. 4, cap. 69, and of the Local Government Board and of the guardians of the poor of the parish or of the union comprising the parish, such consent being testified by their being parties to the conveyance; (*d*) that property held on trust for charitable purposes shall not be so granted without the consent of the Charity Commissioners for England and Wales. Section 2 gives power to any person seised or entitled only for life or lives of or to any manor or lands of freehold tenure to make such grant, conveyance, or enfranchisement as is mentioned in the said Act in cases where the person next entitled to the same for a beneficial interest in remainder in fee simple or fee tail is unborn or unascertained: provided that no such grant, conveyance, or enfranchisement so made shall be valid unless the person holding the life interest (if any, and if legally competent) shall be a party to and shall join in the grant, conveyance, or enfranchisement; or if there be no person so entitled, or if such

person be legally incompetent, then the consent shall be required of the trustees or trustee (if any) of such manor or lands during the suspense or contingency of the then immediate or expectant estate in fee simple or fee tail. By section 3 the Act may be cited as "The Places of Worship Sites Amendment Act, 1882."

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2. TRADE AND COMMERCE.

CORN RETURNS.

[45 & 46 Victoriæ, cap. 37.—10th August, 1882.]

An Act to amend the law respecting the obtaining of Corn Returns.

Section 1 gives the short title of the statute as "The Corn Returns Act, 1882." Section 2 limits its application to England and Wales. Section 3 fixes 1st January, 1883, as the day on which it is to come into force. Section 4 enacts that weekly returns of the purchases of British corn are to be made under the direction of the Board of Trade under the terms of this Act from such towns, not less than 150 and not more than 200, as are fixed from time to time by the Queen in Council, and the average price of British corn ascertained from these returns is to be published by the Board of Trade, as provided in the Act. Section 5 requires weekly returns of purchases of British corn in each of the towns specified by the Queen in Council to be made to the inspector of corn returns for that town by every buyer of corn, either on the last market day in the week or other day fixed from time to time; the return to be in writing, signed by the buyer, and specifying every parcel of each sort of British corn bought by him, whether from the producer or otherwise, within the seven days ending on and including the day on which the return is made, and he is to state the price paid, the weight or measure by which it was bought, the name of the seller, and if the same was sold or bought on account of any other person, the name of that person. If an inspector of corn returns delivers to a buyer of corn required under this Act to make returns a notice requiring him to declare where, and by whom, and in what manner any British corn was delivered to him, such buyer is to make a return of the particulars so required in a separate statement in writing signed by him. Section 6 specifies the persons who are to make the returns required by this Act, and are in this Act referred to as buyers of corn in a town:—(1.) Every person who deals in British corn in such town; (2.) Every person who in any such town engages in or carries on the trade of a cornfactor, miller, maltster, brewer, or distiller; (3.) Every person who is the owner or part owner of any carriages carrying goods or passengers for hire to and from, or within any such town; and (4.) Every person who as a merchant, clerk, agent, or otherwise, purchases in any such town any British corn for sale, or for the sale of meal, flour, malt, or bread made or to be made thereof. Section 7 requires every inspector of corn returns to record in the prescribed manner the returns made to him under the Act, and to ascertain from them the total quantity, the total and average price of each sort of British corn returned to him in that town during every week, and on the next Monday, or such other

day as may be prescribed, he is to send to the Board of Trade in the prescribed manner, and form a summary of such total quantities and total and average prices for the said week. A copy of the weekly summary from any town, together with the prescribed details (exclusive of the names of persons), is to be made public there in the prescribed manner. By section 8 in the weekly summary of quantities and prices each sort of British corn is to be computed according to the imperial bushel, and the inspector is to convert into the imperial bushel all returns made to him in any other measure or by weight or by a weighed measure, and in the case of weight or weighed measure he is to convert the same at the rate of 60 imperial lbs. for every bushel of wheat, 50 imperial lbs. for every bushel of barley, and 39 imperial lbs. for every bushel of oats. Section 9 provides forthe computation of average prices of each sort of British corn from the inspectors' summaries and for their publication in the "London Gazette," and supplies directions as to the method on which the computations are to be made. These averages are to be made up and published for each week, each quarter, and each year, and the publication of the annual average is to be accompanied by a septennial average price. By section 10 the statement of the septennial average price, according to the imperial bushels published in the "London Gazette" under this Act, is to be accepted for the purpose of the Tithe Commutation Acts, instead of the advertisement referred to in 6 and 7 Will. 4, cap. 71. Under section 11 every person failing to make the returns required by this Act, or to include in his return any material particular, is liable on summary jurisdiction to a fine not exceeding 20*l.* By section 12 any person making a false or fraudulent statement in a return to an inspector under this Act, or including or procuring to be included in such return any British corn not *bonâ fide* bought as specified, or any corn which is not British corn, is to be guilty of a misdemeanour. Where the Board of Trade have reason to believe that a return or any particular in one is false in any particular, they may cause that return, or so much as relates to that particular, to be omitted in the computation of the average prices. Section 13 provides that such officers of Inland Revenue as the Commissioners of Inland Revenue from time to time appoint, are to be inspectors of corn returns. In every town from which corn returns are required under this Act, a proper place is to be fixed for the delivery of those returns, and the inspector is to attend there to receive them on the appointed days, the said place being publicly notified by the Commissioners of Inland Revenue. Section 14 gives the Board of Trade power from time to time to make, revoke, vary, and add to, regulations respecting the execution of this Act and the duties of inspectors of corn returns; and the Board is to supply inspectors with the proper books, forms, and documents for the performance of their duties, and the Board may provide for the inspection of the books and papers kept by inspectors for the purposes of this Act. Under section 15 the expenses incurred by the Commissioners of Inland Revenue or the Board of Trade in the execution of this Act, are, subject to the approval of the Commissioners of the Treasury, to be paid out of moneys provided by Parliament. Section 16 provides for the application of the Act to London. Section 17 provides for the recovery of fines under the Act. Section 18 supplies definitions

of terms used in the Act; and section 19 refers to the Acts repealed by this statute—consisting, as catalogued in the schedule, of the whole of 5 and 6 Vict., cap. 14, and 27 and 28 Vict., cap. 87, and section 56 of 6 and 7 Will. 4, cap. 71—and specifies that these repeals are not to affect things done or returns published before the commencement of the present Act, nor persons holding office under the Acts repealed.

ELECTRIC LIGHTING.

[45 & 46 Victoriæ, cap. 56.—18th August, 1882.]

An Act to facilitate and regulate the Supply of Electricity for Lighting and other purposes in Great Britain and Ireland.

Section 1 gives the short title of the statute as "The Electric Lighting Act, 1882." Section 2 defines the application of the Act, which is to include every local authority, company, or person who may by the Act, or by licence, or Provisional Order granted under it, or by any special Act to be hereafter passed, be authorised to supply electricity for public or private purposes within any area (such persons being described in the Act as "the undertakers."), and it is also to apply to all undertakings, licences, orders, and special Acts duly authorised. Section 3 gives the Board of Trade power to issue licences to supply electricity, subject to the following conditions:—(1.) The consent of the local authority having jurisdiction in the area affected by the application for a licence; (2.) The licence is not to be for a longer period than seven years, subject to renewal; (3.) "Public purposes" is to mean lighting any street or place, any church or registered place of public worship, or any hall or building, belonging to or subject to the control of the local authority, or belonging to or subject to the control of any public authority, or any public theatre, and no other purposes; (4.) "Private purposes" include any purposes not being public purposes, except the transmission of a telegram; (5.) Every application for a licence is to be notified by public advertisement under the approval of the Board of Trade, and the licence is not to be granted by the Board of Trade until after the expiration of a period of three months from the date of the first publication of such advertisement, nor until opportunity has been given to all parties interested to make representations or objections to the Board of Trade with reference to the application; (6.) No application for a licence is to be made by any local authority except in pursuance of a resolution to be passed at a special meeting of the local authority held after one month's notice has been given in the manner in which notices of meetings of such local authority are usually given; (7.) A licence may, subject to this Act, be granted to a local authority to supply electricity within any area, although the same or some part thereof may not be included within their own district; (8.) The licence may make such regulations as to the limits within which, and the conditions under which a supply of electricity is to be compulsory or permissive, and for enforcing the performance by the licencees of their duties, and for the revocation of the licence in the event of their failure to perform them, and generally may contain such regulations and conditions as the Board of Trade may think expedient; (9.) In cases where the undertakers are supplying an area not under themselves as local

authority the licence may contain provisions enabling the local authority of that area to use the powers of the undertakers in certain matters connected with the work in hand. Section 4 empowers the Board of Trade to grant Provisional Orders to any local authority, company, or person to supply electricity for public or private purposes without requiring the consents demanded for the granting of a licence under the Act, but otherwise under the conditions specified in section 3. Before the Order is put in force it must be confirmed by Parliament, and if a Petition is presented against it it may be referred to a Select Committee, the petitioner being allowed to appear before such Committee; and further that any Act confirming any Provisional Order granted in pursuance of this Act may, on the application of the undertakers thereby authorised to supply electricity, be repealed, altered, or amended by any subsequent Provisional Order granted by the Board of Trade and confirmed by Parliament. Under section 5 the Board of Trade may from time to time make, rescind, alter, or repeal rules in relation to the applications for licences or Provisional Orders, and to any other matters arising under this Act. Any rules made in pursuance of this section are to be deemed to be within the powers conferred by this Act, are to have the same force as if enacted in this Act, and are to be judicially noticed. Such rules are to be laid before Parliament within three weeks after they are made if Parliament be then sitting, and if Parliament be not then sitting, within three weeks after the beginning of its next session. By section 6 the undertakers are to be subject to regulations and conditions inserted in their licence, order, or special Act as to the following matters:—(*a*) The limits within which and the conditions under which a supply of electricity is to be compulsory or permissive; (*b*) the securing a regular and efficient supply; (*c*) the safety of the public from personal injury, or from fire or otherwise; (*d*) the limitation of the prices to be charged for the supply; (*e*) the authorising, inspection, and inquiry from time to time by the Board of Trade and the local authority; (*f*) the enforcement of the due performance of the duties of the undertakers in relation to the supply of electricity by the imposition of penalties or otherwise, &c. The Board of Trade is also authorised to make such regulations as they think fit for securing the public safety, and the local authority in whose area electricity is supplied may make bye-laws for the same purpose, which must, however, be confirmed by the Board of Trade before they have force or effect. Section 7 provides for the payment by a local authority of expenses incurred under the Act, not otherwise provided for, out of a local rate which it is empowered to levy, including expenses for obtaining a licence or for opposing the obtaining of a licence by any other local authority, company, or person. Section 8 enables a local authority to borrow money for the purposes of the Act. Section 9 requires the undertakers to make up on or before 25th March accounts for the undertaking for year ended on previous 31st December, such accounts to be published as directed by the Board of Trade. The undertakers are to keep copies of such statement at their office, and sell the same to any applicant at a price not exceeding 1*s*. In case of default in complying with this section, the undertakers are to be liable to a penalty not exceeding 40*s*. for each day during which such default continues. Section 10 sets forth the general powers

of undertakers under licence or Provisional Order. Section 11 empowers local authorities who have obtained a licence to contract with company for the execution or maintenance of any works, or for the supply of electricity, but no such authority can divest itself of the legal powers imposed on them, or transfer such powers without consent of the Board of Trade. Section 12 provides for the incorporation of certain provisions of Clauses Consolidation Acts with this Act. Section 13 requires the consent of the local authority or persons by whom a street railway or tramway is repairable before it is broken up by the undertakers under this Act, unless special powers in that behalf are included in the licence, or with the written consent of the Board of Trade, and the Board of Trade is not in any case to insert any such special powers in any licence or Provisional Order, or give any such consent until notice has been given to the authority, company, or person, by advertisement or otherwise, as the Board of Trade may direct, and an opportunity has been given to such authority, company, or person to state any objections they may have thereto. By section 14 similar consent is required to work done by the undertakers above ground, and the local authority may require the undertakers to forthwith remove any electric line placed by them contrary to the provisions of this section, or may themselves remove the same, and recover the expenses of such removal from the undertakers in a summary manner; and where any electric line has been placed above ground by the undertakers in any position, a court of summary jurisdiction, upon complaint made, if they are of opinion that such electric line is or is likely to become, dangerous to the public safety, may, notwithstanding any such consent as aforesaid, make an order directing and authorising the removal of such electric line by such person and upon such terms as they may think fit. By section 15 powers are given to the undertakers to alter position of pipes and wires in any street or place authorised to be broken up, on previously making or securing compensation to the owners of such pipes or wires, and complying with the conditions agreed upon between the parties before the commencement of the work, or if there is a difference of opinion between the owners and undertakers, on such conditions as may be determined by the licence or Provisional Order, or by arbitration. Section 16 provides for cases where, after the undertakers have placed works on or about canals, any person having powers to construct docks or other works in the vicinity, find the undertakers are interfering with them. The undertakers in such a case are to remove their works round such dock or other work, and if any dispute arises it is to be determined by arbitration. Section 17 provides for compensation to be given by the undertakers for any damage unavoidably done in the execution of their works, subject to arbitration as to amount. By section 18 the undertakers are not to be entitled to prescribe any special form of lamp or burner to be used by any company or person, or in any way to control or interfere with the manner in which electricity supplied by them under this Act, and any licence, order, or special Act is used: but no local authority, company, or person is to be at liberty so to use the electricity supplied to them for any purposes, or to deal with it in any manner so as to unduly or improperly interfere with the supply to any other local authority, company, or person by the

undertakers; any dispute on the subject is to be determined by arbitration. Section 19 gives every person where a supply of electricity is provided in any part of an area for private purposes, a right, on application, to a supply on the same terms on which any other company or person in such part of the area is entitled under similar circumstances to a corresponding supply. Section 20 refers to the charges for electricity to be made by the undertakers, who are not to show any undue preference to any local authority, company, or person; and section 21 empowers them to cut off the supply for the recovery of charges. Section 22 provides for the imprisonment of any person injuring works with intent to cut off the supply of electricity; and section 23 makes it a simple larceny to waste or steal electricity. Section 24 gives the officers of the undertakers power to enter lands or premises for ascertaining quantities of electricity consumed, or to remove fittings, &c. Section 25 exempts electric lines, &c., from distress for rent, or from any process in a court of law or equity, or in any bankruptcy proceedings against the person in whose possession they may be. Section 26 provides that no alteration in any telegraph line of the Postmaster-General shall be made by the undertakers except subject to the provisions of the Telegraph Act, 1878, makes other provisions for the protection of the property of the Postmaster-General. Section 27 provides for the purchase of the undertaking by the local authority under certain conditions, on compliance with which the undertakers are to be compelled to sell. Under section 28, where matters have to be submitted to arbitration, they are to be determined by an engineer or other fit person to be nominated as arbitrator by the Board of Trade on the application of either party, and the expenses of the arbitration are to be borne and paid as the arbitrator directs. Section 29 gives power for Board of Trade to relieve gas undertakers from obligation to supply gas in cases where the Board are satisfied that any specified part of any area is sufficiently supplied with electric light, that the supply of gas in such specified part has ceased to be remunerative to the gas undertakers, and that it is just that such gas undertakers should be relieved from the obligation to supply gas. By section 30 an annual report by Board of Trade of the applications and proceedings under this Act is to be laid before both Houses of Parliament not later than July 1 in each year. Section 31 gives a definition of local authority, &c.; section 32 gives interpretation of terms used in the Act; section 33 protects owners of mines from injury through laying electric wires; section 34 contains provision as to general Acts; and section 35 saves the privileges of the Postmaster-General from any injury. Section 36 provides for the application of the Act to Scotland; and section 37 for its application to Ireland. There is a schedule giving complete definitions of all terms used in the Act.

COPYRIGHT IN MUSICAL COMPOSITIONS.

[45 & 46 Victoriæ, cap. 40.—10th August, 1882.]

An Act to Amend the Law of Copyright relating to Musical Compositions.

The preamble declares the expediency of amending the law relating

to musical compositions, and of protecting the public from vexatious proceedings for the recovery of penalties for the unauthorised performance of such works. By Section 1, on and after the passing of this Act, the owner of the copyright in any musical composition, or his assignee who is entitled and is desirous of retaining in his own hands exclusively the right of public representation or performance of the same is to print or cause to be printed a notice to that effect on the title page of every published copy of the work. Section 2 provides that when the right of public representation or performance, and the copyright are vested before publication in different owners, the owner of the right of performance shall give notice to the owner of the copyright to print a notice on the title page reserving the right of performance. If the right of performance and the copyright become vested in different owners subsequently to the passing of this Act, and such notice as aforesaid has been duly printed on all copies published previously to such vesting, then, if the owner of the right of performance and representation desires to retain the same, he is, before the publication of any further copies, to give notice in writing to the then owner of the copyright, requiring him to print such notice on every copy to be thereafter published. Under section 3 a penalty of 20*l*., recoverable in any court of competent jurisdiction, is imposed on the owner of copyright for non-compliance with notice from the owner of the right of performance. By section 4, notwithstanding the provisions of 3 and 4 Will. 4, cap. 15, amending the laws relating to dramatic literary property, or any other Act in which those provisions are incorporated, the costs of any action or proceedings for penalties or damages in respect of the unauthorised representation or performance of any musical composition published before the passing of this Act are, in cases in which the plaintiff does not recover more than 40*s*. as penalty or damages, to be in the discretion of the court or judge before whom such action or proceedings shall be tried. Section 5 gives the short title of the statute as "The Copyright (Musical Compositions) Act, 1862."

USE OF GUNPOWDER IN SLATE MINES.

[45 & 46 Victoriæ, cap. 3.—29th March, 1882.]

An Act to amend the Law relating to the use of Gunpowder in Slate Mines.

Section 1 gives the short title of the statute as "The Slate Mines (Gunpowder) Act, 1882." Section 2 gives one of Her Majesty's Secretaries of State power to exempt slate mines from certain regulations relating to the use of explosives in sub-section 2 of section 23 of 35 and 36 Vict., but the exemption is not to come into force until granted by the Secretary of State, who may at any time revoke such exemption, but such revocation is not to come into force until written or printed notice thereof has been posted up at the mine for 24 hours. A list of the exemptions granted or revoked under this Act is to be set forth by the inspector of the district in his annual report.

BOILER EXPLOSIONS.

[45 & 46 Victoriæ, cap. 22.—12th July, 1882.]

An Act to make better provision for Inquiries with regard to Boiler Explosions.

The preamble recites that provision has been made by law for inquiry into the causes and circumstances of boiler explosions on board ships and on railways, and it is expedient to make like provision for inquiries into boiler explosions in other cases. Section 1 gives "The Boiler Explosions Act, 1882," as the short title, and section 2 extends the operation of the Act to the whole of the United Kingdom. Section 3 defines the terms used in the Act, and section 4 exempts from its operation any boiler used exclusively for domestic purposes or boilers used in the Queen's service or on board a steamship certificated by the Board of Trade, or any boiler explosion into which inquiry may be made under "The Coal Mines Regulation Act, 1872," and "The Metalliferous Mines Regulation Act, 1872." Section 5 requires notice of a boiler explosion to be sent to the Board of Trade within 24 hours after its occurrence by the owner or user or by the person acting on his behalf, stating the precise locality as well as the day and hour of the explosion, the number of persons injured or killed, in addition to the purposes for which the boiler was used, the part of the boiler that failed, and the extent of the failure, and such other particulars, if any, as the Board of Trade by notice inserted in the "London Gazette" or otherwise may require. For default in complying with the requirements of this section, the person in default is, on summary conviction, to be liable to a fine not exceeding 20*l.* Section 6 gives the Board of Trade power to direct inquiry into the explosion, and after a preliminary inquiry to direct a formal investigation by not less than two Commissioners in open court—one to be a competent and practical engineer specially conversant with the manufacture and working of steam boilers, and the other a competent lawyer—the court being invested with all the powers of a court of summary jurisdiction and special powers to enter buildings, summon witnesses, order the production of books, &c. The Commission is to report to the Board of Trade. Section 7 makes provision as to the costs of the inquiry, and section 8 for the recovery of fines under the Act. The schedule supplies the form in which an explosion is to be reported to the Board of Trade.

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3. FINANCE AND TAXATION.

ESTABLISHMENT OF THE DUKE OF ALBANY.

[45 & 46 Victoriæ, cap. 5.—21st April, 1882.]

An Act to enable Her Majesty to provide for the Establishment of His Royal Highness the Duke of Albany and Her Serene Highness the Princess Helen Frederica Augusta of Waldeck and Pyrmont, and to settle an Annuity on Her Royal Highness.

The preamble recites the prayer of the Commons, who, having taken into consideration the Queen's message as to the marriage of the

Duke of Albany with the Princess Helen of Waldeck, beseech Her Majesty that the provision subsequently named may be made for their Royal Highnesses. Section 1 makes it lawful for Her Majesty to grant an annuity of 10,000*l.* for life to Prince Leopold George Duncan Albert, Duke of Albany, in addition to the annuity already granted to him by Parliament. Section 2 contains a provision that in the event of His Royal Highness succeeding to any sovereignty or principality abroad, it shall be lawful for Her Majesty or her successors, with the consent of Parliament, to revoke or reduce the said annuity by warrant under the sign manual. Section 3 makes it lawful for Her Majesty or her successors to grant an annuity of 6,000*l.* to Her Serene Highness in the event of her surviving His Royal Highness the Duke of Albany. Section 4 provides that these annuities shall, if Her Majesty think fit so to direct, be personal and inalienable provisions, and the same shall be charged on and payable out of the Consolidated Fund of the United Kingdom of Great Britain and Ireland, after meeting claims already contracted on that fund, but with preference to all other payments hereafter charged on it. Section 5 gives the short title of the statute as "The Duke of Albany's Establishment Act, 1882."

PENSIONS COMMUTATION.

[45 & 46 Victoriæ, cap. 44.—18th August, 1882.]

An Act to authorise the Commutation of a portion of a Pension in pursuance of "The Pensions Commutation Act, 1871."

The preamble recites that doubts have arisen as to the power of the Treasury under "The Pensions Commutation Act, 1871," to commute a portion of a pension, and the expediency of removing such doubts. Section 1 gives the short title of the statute as "The Pensions Commutation Act, 1882." Under section 2 this Act and the Pensions Commutation Acts, 1871 and 1876, may be cited as "The Pensions Commutation Acts, 1871 to 1882." Section 3 enacts that where the Treasury have power, in pursuance of "The Pensions Commutation Act, 1871," to commute the pension of any person, the Treasury shall also have power to commute a portion of such pension, and the provisions of the Pensions Commutation Acts, 1871 and 1876, shall apply accordingly to the portion of the pension in like manner, so nearly as circumstances admit, as they apply to the whole pension.

GOVERNMENT ANNUITIES.

[45 & 46 Victoriæ, cap. 51.—18th August, 1882.]

An Act to extend the Acts relating to the purchase of small Government Annuities and to lessening Payments of Money on Death.

The preamble recites the expediency of extending the powers of the National Debt Commissioners under the Government Annuities Acts, 1829 to 1873, to grant annuities and insurances. Section 1 gives the short title as "The Government Annuities Act, 1882," and provides for it to be cited with previous Acts as "The Government Annuities Acts, 1829—1882," and for its construction as one with "The Government Annuities Act, 1864." Section 2 provides that an annuity to any one person under these Acts (styled in this statute a

savings bank annuity) may be of any amount not exceeding 100*l.* and may be granted to any person not under the age of five years. Section 3 enacts that the National Debt Commissioners may, subject to the limits in this Act mentioned, contract with any person for a payment styled a savings bank insurance, to be made on the attainment by such person of a specified age, or sooner in case of his death, such insurance being limited, by section 4, to any amount not exceeding 100*l.*, and the age limit being not over the age of sixty-five years and not under the age of fourteen years, or if the amount does not exceed 5*l.*, not under the age of eight years. Section 5 empowers the Treasury on the passing of this Act to cause tables to be constructed for the grant of savings banks annuities and insurances, such tables, when approved by the Treasury, together with a statement of the rules observed in constructing them, to be laid before both Houses of Parliament for not less than thirty days, and if any address is presented to Her Majesty by either House of Parliament praying that such table may be cancelled, the table is to be cancelled without prejudice to the framing of another table in lieu of it. After the expiration of the thirty days the Treasury may cause the table, if not cancelled, to be published in the "London Gazette," and to come into operation on the day of that publication or such later day as may be fixed by the Treasury. The tables are to be framed in such manner that the fund formed by the receipt of sums in respect of deferred annuities and of insurances, and the amounts paid for immediate annuities, shall respectively be adequate (after payment of expenses) to meet all claims without causing any loss to the Exchequer, so that the payments to obtain the annuities and insurances may be made in one sum or in annual or more frequent instalments. The tables may also provide for variations in the rates for and conditions of annuities and insurances, or for their surrender or other matters. New tables may from time to time be made and sanctioned by the Treasury, one table being in force until another is made. A new table for reduction of premiums may be made when the receipt of sums in respect of insurances is so much in excess of the liabilities as to make it possible. Section 6 supplies rules to be made as to the granting of assurance, regulating payments, nomination of persons to receive insurances under 50*l.* on the death of the assured, and the assurance of minors and children. Section 7 provides for the application of the Savings Banks Acts in connection with this Act. Sections 8 to 13 contain a variety of miscellaneous provisions. Section 14 contains definitions. Section 15 refers to the portions of Acts repealed by this Act (set forth in the schedule); and section 16 extends the Acts of 1853, 1864, and this Act to the Channel Islands and the Isle of Man.

CUSTOMS AND INLAND REVENUE DUTIES.

[45 & 46 Victoriæ, cap. 41.—10th August, 1882.]

An Act to grant certain Duties of Customs and Inland Revenue, to alter other Duties, and to amend the Laws relating to Customs and Inland Revenue.

Section 1 gives as the short title "The Customs and Inland Revenue Act, 1882." Section 2 fixes the customs duties on tea, on its importa-

tion into the United Kingdom, from 1st August, 1882, to 1st August, 1883, at 6*d.* in the lb. Section 3 repeals the customs duties, and section 4 the excise duties on vegetable matter other than chicory applicable to the uses of chicory or coffee. Section 5 empowers the Inland Revenue Commissioners to impose a duty of ½*d.* on every ¼ lb. of any article or substance prepared or manufactured for the purpose of being in imitation of, or in any respect to resemble, or to serve as a substitute for, coffee or chicory, which is sold or kept for sale in the United Kingdom, and also upon every ¼ lb. weight of any mixture of such article or substance as aforesaid with coffee or chicory which is sold or kept for sale in the United Kingdom. Section 6 requires that all such articles shall be sold in ¼lb. packets, distinctly labelled and stating the amount of duty payable, and the proper name of the several articles or substances of which the mixture is composed. Persons selling such articles under any other conditions are to forfeit the same and incur a fine of 20*l.* By section 7 a penalty of 100*l.* is imposed on any person preparing, manufacturing, selling, or keeping for sale such substances or mixtures who buys, receives, or has in his possession any label provided under this Act, which shall have been used before, or any portion of such label, either loose or affixed to a packet. Section 8 repeals section 5 of 43 Geo. 3, cap. 129. Part II relates to the Income Tax. Section 9 provides that the following duties of Income Tax shall be charged, collected and paid for the year which commenced 6th April, 1882: For every 20*s.* of the annual value or amount of property, profits, and gains chargeable under Schedules (A.), (C.), (D.), or (E.) of the said Act, the duty of 6½*d.*, and for every 20*s.* of the annual value of the occupation of lands, tenements, hereditaments, and heritages chargeable under Schedule (B.) of the said Act,—in England the duty of 3¼*d.*, in Scotland and Ireland respectively, the duty of 2⅝*d.* Provided always, that where any dividends, interests, or other annual profits or gains are due or payable half-yearly or quarterly in the course of the said year, the first half-yearly payment and the two first quarterly payments shall be deemed to have been or be chargeable with the duty of 5*d.*, and the other half-yearly payment and the two other quarterly payments shall be deemed to be chargeable with the duty of 8*d.* Section 10 enacts that all provisions contained in any Act relating to income tax, as were in force on 5th April, 1882 (except section 22 of the Customs and Inland Revenue Act, 1881) shall have full force and effect with respect to the duties of income tax granted by this Act so far as the same shall be consistent with the provisions of this Act. Section 11 provides that where any half-yearly or quarterly dividend or other annual profits or gains due or payable quarterly or half-yearly have been paid prior to the passing of this Act without any charge for the duty of income tax at the rate of 5*d.* having been made thereon or deducted therefrom, the amount of the said duty shall be added to the assessment in respect of the next half-yearly or quarterly payment to such person, and charged thereon and deducted therefrom accordingly. A similar rule is to apply to any person liable to pay any rent, interest, annuity, or other annual payment in the course of the said year who shall, on making any such payment prior to the passing of this Act, have not made any deduction or have made an insufficient deduction

in respect of income tax; he is authorised to make the deduction or a sufficient deduction to make up the deficiency on the occasion of the next payment, in addition to any other deduction which he may by law be authorised to make. The charge or deduction of the duty of income tax at the rate of 5*d.* in the case of any payment made in the course of the said year prior to the passing of this Act is to be deemed to have been a legal charge or deduction. Section 12 supplies provisions of Income Tax Acts to apply to duties to be granted for the succeeding year.

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4. LAW AND JUSTICE.

ELECTION OF REPRESENTATIVE PEERS FOR IRELAND.

[45 & 46 Victoriæ, cap. 26.—12th July, 1882.]

An Act to amend the Law relating to the Election of Lords Temporal to serve in Parliament for Ireland.

Section 1 of this brief statute enacts that in the event of any future election of a Lord Temporal to serve in Parliament for Ireland, the period of 52 days from the teste of the writs for such election, within which it is required by the Act of Union of Great Britain and Ireland that the same shall be returned into the Crown Office of Ireland, shall be reduced to a period of 30 days. Section 2 gives the short title as "The Election of Representative Peers (Ireland) Act, 1882."

SUSPENSION OF ELECTIONS FOR CORRUPT PRACTICES.

[45 & 46 Victoriæ, cap. 68.—18th August, 1882.]

An Act to suspend for a limited period, on account of Corrupt Practices, holding of an Election of a Member or Members to serve in Parliament for certain cities and boroughs.

The preamble recites that in pursuance of addresses to Her Majesty from both Houses of Parliament in relation to election of members to serve in Parliament for the cities and boroughs mentioned in the schedule to this Act (Boston, Canterbury, Chester, Gloucester, Macclesfield, Oxford, and Sandwich), commissioners were appointed by commissions, dated 9th September, 1880, and that as they have respectively reported the existence of corrupt practices, it is expedient, with a view to the future consideration of the cases by Parliament, to provide temporarily for the suspension of elections in the said cities and boroughs. Section 1 gives the short title as "The Corrupt Practices (Suspension of Elections) Act, 1882." Section 2 enacts that an election of a member or members to serve in Parliament for any of the cities or boroughs mentioned shall not be held until the expiration of seven days after the meeting of Parliament in the year 1883.

QUINQUENNIAL RETURNS BY FRIENDLY SOCIETIES.

[45 & 46 Victoriæ, cap. 35.—10th August, 1882.]

An Act to amend so much of "The Friendly Societies Act, 1875," as relates to quinquennial returns of sickness and mortality.

The preamble recites that by section 14 of "The Friendly Societies

Act, 1875," every registered society is required, within six months after the expiration of every five years, to send to the registrar a return to be called the quinquennial return of the sickness and mortality experienced by the societies during the said five years, and an abstract of such return is to be laid before Parliament; it further states that the returns made in pursuance of the said section have furnished materials for the construction of tables of sickness and mortality for the guidance of friendly societies, and that it is inexpedient to impose any longer the burden of sending such returns. Section 2 repeals so much of 38 and 39 Vict., cap. 60, sec. 14, as relates to the quinquennial returns which are no longer to be rendered. By section 1 this Act may be cited as "The Friendly Societies (Quinquennial Returns) Act, 1882."

INTERMENT OF PERSONS FOUND FELO DE SE.

[45 & 46 Victoriæ, cap. 19.—3rd July, 1882.]

An Act to amend the Law relating to the Interment of any person found Felo de Se.

The preamble declares it to be expedient that the laws and usages relating to the interment of the remains of persons against whom a finding of felo de se shall be had should be further altered and amended. Section 1 repeals 4 Geo. 4, cap. 52, intituled "An Act to alter and amend the law relating to the interment of the remains of any person found felo de se." Section 2 provides that from and after the passing of this Act it shall not be lawful for any coroner or other officer having authority to hold inquests to issue any warrant or other process directing the interment of the remains of persons against whom a finding of felo de se shall be had in any public highway, or with any stake being driven through the body of such person, but such coroner or other officer shall give directions for the interment of the remains of such person felo de se in the churchyard or other burial ground of the parish or place in which the remains of such person might by the laws or custom of England be interred if the verdict of felo de se had not been found against such person. Under section 3 the interment of any such person may be made in any of the ways prescribed or authorised by "The Burial Laws Amendment Act, 1880," but section 4 declares that nothing in this statute shall authorise the performing of any of the rites of Christian burial on the interment of the remains of any such person as aforesaid, or be taken to alter the laws or usages relating to the burial of such persons. The Act by section 5 is to extend to the Channel Islands, but shall not apply to Scotland or to Ireland. By section 6 the short title is "The Interments (felo de se) Act, 1882."

DOCUMENTARY EVIDENCE.

[45 & 46 Victoriæ, cap. 9.—19th June, 1882.]

An Act to amend "The Documentary Evidence Act, 1868," and other enactments relating to the Evidence of Documents by means of copies printed by the Government Printers.

The preamble recites that by "The Documentary Evidence Act,

1868," and enactments applying that Act, divers proclamations, orders, regulations, rules, and other documents may be proved by the production of copies thereof purporting to be printed by the Government Printer, and the Government Printer is thereby defined to mean and include the Printer to Her Majesty; and whereas divers other enactments provide that copies of Acts of Parliament, regulations, warrants, circulars, gazettes, and other documents shall be admissible in evidence if purporting to be printed by the Government Printer, or the Queen's Printer, or a printer authorised by Her Majesty, or otherwise under the authority of Her Majesty; it is expedient to make further provision respecting the printing of the copies aforesaid. Section 1 gives as a short title "The Documentary Evidence Act, 1882." Section 2 provides that where any enactment, whether passed before or after the passing of this Act, provides that a copy of any Act of Parliament, proclamation, order, regulation, rule, warrant, circular, list, gazette, or document shall be conclusive evidence, or be evidence, or have any other effect, when purporting to be printed by the Government Printer, or the Queen's Printer, or a printer authorised by Her Majesty, or otherwise under Her Majesty's authority, whatever may be the precise expression used, such copy shall also be conclusive evidence, or evidence, or have the said effect (as the case may be) if it purports to be printed under the superintendence or authority of Her Majesty's Stationery Office. By section 3 a person printing or offering in evidence any Act or document falsely purporting to have been printed under the authority of Her Majesty's Stationery Office, knowing that it was not so printed, is to be held guilty of felony, and on conviction is to be liable to penal servitude for a term not exceeding seven years, or to imprisonment for a term not exceeding two years, with or without hard labour. By section 4 the Act is to apply to Ireland.

INFERIOR COURTS JUDGMENTS EXTENSION.

[45 & 46 Victoriæ, cap. 31.—24th July, 1882.]

An Act to render Judgments obtained in certain Inferior Courts in England, Scotland, and Ireland respectively, effectual in any other part of the United Kingdom.

The preamble declares the expediency of extending the principle of "The Judgments Extension Act, 1868," to the judgments of certain inferior courts of Great Britain and Ireland. Section 1 gives, as the short title of the statute, "The Inferior Courts Judgments Extension Act," and section 2 gives an interpretation of terms used in the Act, the expression "inferior courts," including County Courts, Civil Bill Courts, and all Courts in England and Ireland having jurisdiction to hear and determine civil causes other than the High Courts of Justice, and in Ireland Courts of Petty Sessions and the Court of Bankruptcy, and in Scotland the Sheriffs' Court and Courts held under the Small Debts and Debts Recovery Acts. Section 3 requires the registrar of an inferior court to grant certificate of judgment upon the application of the party who has recovered. By section 4 the registration of the certificate is to have the effect of a judgment of the court in which it is registered. By section 5, where a certificate of a judgment in any

of the inferior courts has been registered under this Act, process of execution may issue thereon out of the court in which it was registered in the same way as if the judgment to be executed had been obtained in the court in which it was registered, and by section 6 the courts in which judgments are so registered are to have the same control and jurisdiction over their execution as they have with respect to the execution of judgments given in their own courts. Section 7 provides that on proof of the setting aside, or satisfaction, of any judgment of which a certificate shall have been registered under this Act, the court in which such certificate is so registered may order the registration to be cancelled. By section 8 costs are not to be allowed in actions on judgments unless by order of the court in which the action shall be brought. Section 9 provides that nothing contained in this Act shall authorise the registration in an inferior court of the certificate of any judgment for a greater amount than might have been recovered if the action or proceeding had been originally commenced in such inferior court, but where a judgment obtained in an inferior court in Scotland cannot, for this reason, be registered in an inferior court in England or Ireland, it shall be competent to register a certificate of such judgment in the register directed to be kept in the Court of Common Pleas at Westminster and Dublin respectively, to be called "The Register of Scotch Judgments," by section 3 of the Judgments Extension Act. Section 10 provides that this Act is not to apply to any judgment pronounced by an inferior court in England against any person domiciled in Scotland or Ireland at the time of the commencement of any action, unless the whole cause of action shall have arisen, or the obligation to which the judgment relates ought to have been fulfilled, within the district of such inferior court, and the summons was served upon the defendant personally within the said district, and the same provision applies to the judgments of inferior courts in Scotland against persons domiciled in England or Ireland, and of inferior courts in Ireland against persons domiciled in England or Scotland. It is to be competent to any person against whom any judgment to which, under this section this Act does not apply, if it is sought to enforce it, to apply for and obtain from one of the superior courts in the respective countries a prohibition or injunction against the enforcement of such judgment and of any execution thereon. Section 11 provides for the making and altering of rules for the purposes of this Act by the persons duly qualified to do so.

COSTS AND SALARIES IN COUNTY COURTS.

[45 & 46 Victoriæ, cap. 57.—18th August, 1882.]

An Act to amend the Law relating to Costs and Salaries in County Courts.

Section 1 provides that this Act shall be one of the County Courts' Acts, and be cited for all purposes as "The County Courts' (Costs and Salaries) Act, 1882." By section 12 so much of 9 and 10 Vict., cap. 95, sec. 91, as is still in force is hereby repealed, and the following provisions are to take effect in lieu thereof: No person other than a solicitor of the Supreme Court is to be entitled to have or recover any fee or

reward for appearing or acting on behalf of any other party in any proceeding in a county court; provided always, that nothing in this Act contained is to affect the right of any barrister-at-law to appear or act in any county court, or of any solicitor of the Supreme Court to recover costs in respect of his employment of a barrister-at-law to appear or act. Section 3 repeals so much of 29 and 30 Vict., cap. 14, sec. 2, as limits the salaries and expenses of the persons by whom the accounts of the county courts are to be examined. By section 4, section 5 of 30 and 31 Vict., cap. 142, is to be read and construed as if the words "less than" were substituted for the words "not exceeding." Section 5 enacts that notwithstanding any Act of Parliament or any rule to the contrary, it shall be in the power of the judge of a county court to award costs on the higher scale to the plaintiff on any amount recovered, however small, or to the defendant who successfully defends an action brought for any amount, however small, provided the said judge certifies that the action involved some novel or difficult point of law, or that the question litigated was of importance to some class or body of persons or of general or public interest.

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5. LOCAL GOVERNMENT.

POOR RATE ASSESSMENT AND COLLECTION.

[45 & 46 Victoriæ, cap. 20.—3rd July, 1882.]

An Act to amend "The Poor Rate Assessment and Collection Act, 1869."

Section 1 gives the short title of this Act as "The Poor Rate Assessment and Collection Act, 1869, Amendment Act, 1882," and by section 2 it is to be read as one with "The Poor Rate Assessment and Collection Act, 1866," as amended. Under section 3 the provisions of section 16 of the Act of 1869, so far as regards the payment of rates by an outgoing occupier are to extend and apply to any outgoing occupier assessed in the rate, and such outgoing occupier is only liable to pay so much of the rate as shall be proportionate to the time of his occupation within the period for which the rate was made, notwithstanding he may not be succeeded in his occupation by an incoming tenant. Section 4 requires that in a parish in which there is no church or chapel of the parish, a poor rate, whether made before or after the passing of this Act, is to be deemed to have been duly published if, within fourteen days after the making of the rate, notice thereof has been given by affixing such notice in some public and conspicuous place or situation in the parish.

HIGHWAY RATE ASSESSMENT AND EXPENDITURE.

[45 & 46 Victoriæ, cap. 27.—12th July, 1882.]

An Act to extend certain Provisions of "The Poor Rate Assessment and Collection Act, 1869," to the Highway Rate, and for other purposes.

Section 1 gives the short title as "The Highway Rate Assessment and Expenditure Act, 1882," and section 2 limits its application to England and Wales. Section 3 provides that where in any parish the

vestry have, under section 4 of "The Poor Rate Assessment and Collection Act, 1869," ordered or shall hereafter order that the owners of all rateable hereditaments to which section 3 of that Act extends shall be rated to the poor rate in respect of such hereditaments instead of the occupiers, such order is to be deemed to extend to and include the highway rate, and whilst it is in force the owners of such hereditaments are to be rated and assessed instead of the occupiers to the highway rates made after the passing of this Act for any highway parish which is co-extensive with such parish or with any part of it, and to which otherwise such occupiers might by law be rated; subject to the abatements or deductions and to the conditions specified in sections 4 and 5 of the said Act. For the purposes of this section the term "overseers" in section 4 of the Act of 1869 is to be construed to mean "surveyor of highways or other person authorised by law to make and levy a highway rate," and he is to have the same powers, remedies, and privileges for recovering the rates made under this Act upon owners, as the overseers of the poor have under "The Poor Rate Assessment and Collection Act, 1869," for the recovery of a poor rate, and when the overseers are required by law to levy the highway rate, and such rate applies to the whole parish, they may levy the same as part of the poor rate. Section 30 of "The Highway Act, 1835," relating to the composition for rates in certain cases under local Acts is hereby repealed. Section 4 provides that the valuation list in force in a parish is to be conclusive as the basis of calculating the highway rate. By section 5 any expenditure lawfully incurred which the rates levied and sums received by a surveyor during his term of office are insufficient to meet may be reimbursed to him by his successor. Section 6 declares that the maintenance of milestones and fencing on a highway for the protection from danger of persons travelling on it are lawful charges on the highway rate. Section 7 extends section 9 of "The Highways and Locomotives (Amendment) Act, 1878," as amended by "The District Auditors Act, 1879," in relation to audit of accounts to the accounts of a waywarden. Section 8 provides for recovery and payment of certified balances as in the case of the audit of poor rate accounts. Section 9 makes provision as to excluded parts of parishes by enabling the owners and ratepayers of the excluded part by resolution passed at a meeting to be convened and conducted in manner provided by Schedule 3 of "The Public Health Act, 1875," to decide that such part shall be a highway parish, and if the resolution is approved by an order of the Local Government Board the excluded part is, from a date to be fixed by the said order, to be for all purposes connected with highways, surveyors of highways, and highway rates, considered and treated as a separate highway parish. Section 10 interprets terms used in the Act.

BATHS AND WASH-HOUSES.

[45 and 46 Victoriæ, cap. 30.—24th July, 1882.]

An Act to amend the Baths and Wash-Houses Acts.

The preamble recites that it is desirable to give increased facilities to local authorities for providing baths and wash-houses within easy and convenient reach. Section 1 provides that this Act may be cited for

all purposes as "The Baths and Wash-Houses Act, 1882," and be read as one with 9 and 10 Vict., c. 74. By section 2, section 27 of the Act just named is to be amended by the addition of the words "or in the immediate neighbourhood of such borough or parish," to the words "in any such borough or parish" wherever such last-mentioned words occur in the said section. By section 3 the power conferred by section 24 of 9 and 10 Vict., c. 74, to purchase or rent lands for the purposes of that Act, is extended to lands in the immediate neighbourhood of such borough or parish as is therein referred to.

BEER DEALERS' RETAIL LICENCES.

[45 and 46 Victoriæ, cap. 34.—10th August, 1882.]

An Act to amend "The Beer Dealers' Retail Licences Act, 1880."

The preamble recites that it is expedient to extend the provisions of the Act to the granting of certificates for all licences for sale of beer by retail for consumption off the premises. Section 1 provides that notwithstanding anything in section 8 of "The Wine and Beer-house Act, 1869," or in any other Act now in force, the licensing justices shall be at liberty, in their free and unqualified discretion, either to refuse a certificate for any licence for sale of beer by retail to be consumed off the premises on any grounds appearing to them sufficient, or to grant the same to such persons as they in the execution of their statutory powers and in the exercise of their discretion deem fit and proper. By section 2 certificates for any such licences are, notwithstanding anything in any Act now in force, to be granted at general annual licensing meetings, and not at any other time. Under section 3 this Act may be cited as "The Beer Dealers' Retail Licences (Amendment) Act, 1882;" it is not to extend to Scotland; and words in it are to have the same meaning as in "The Licensing Act, 1872."

ADMISSION AND DISCHARGE OF PAUPERS IN WORK-HOUSES.

[45 & 46 Victoriæ, cap. 36.—10th August, 1882.]

An Act to amend "The Pauper Inmates Discharge and Regulation Act, 1871."

Section 1 gives the short title of this Act as "The Casual Poor Act, 1882," and provides that it be construed as one with "The Pauper Inmates Discharge and Regulation Act, 1871." Section 2 enacts that it shall commence and come into operation from and immediately after the last day of December, 1882, and section 3 restricts its operation to England and Wales. By section 4, section 5 of "The Pauper Inmates Discharge and Regulation Act, 1871," is repealed, and in lieu thereof it is enacted as follows: A casual pauper shall not be entitled to discharge himself from a casual ward before nine o'clock in the morning of the second day following his admission, nor before he has performed the work prescribed for him as in the said Act mentioned; and where a casual pauper has been admitted on more than one occasion during one month into any casual ward of the same union, he shall not be entitled to discharge himself before nine o'clock in the morning of the

fourth day after his admission, and he may at any time during that interval be removed by any officer of the guardians, or by a police constable, to the workhouse of the union, and be required to remain in such workhouse for the remainder of the period of his detention. Provided that in computing the number of days during which a casual pauper may be detained under this section Sunday is not to be included. In the metropolis, in determining the number of admissions of a casual pauper, every casual ward in the metropolis is to be deemed a casual ward of the same union. The expressions "workhouse of the union" in this section are to include any workhouse and any asylum provided under "The Metropolitan Poor Act, 1867," for the reception and setting to work of the casual poor. Section 5 enacts that if any person, for the purpose of obtaining relief from the rates raised for the relief of the poor, for himself or for any other person, wilfully gives a false name, or makes or uses a false statement to the guardians of any union or any of their officers, he shall be deemed an idle and disorderly person within the meaning of 5 Geo. 4, cap. 83, s. 3.

LODGING AND ACCOMMODATION FOR FRUIT PICKERS.

[45 & 46 Victoriæ, cap. 23.—12th July, 1882.]

An Act to extend "The Public Health Act, 1875," to the making of Byelaws for Fruit Pickers.

By section 1 this Act may be cited as "The Public Health (Fruit Pickers' Lodgings) Act, 1882," and is to be construed as one with "The Public Health Act, 1875." Section 2 provides that section 314 of "The Public Health Act, 1875," which enables any local authority to make byelaws for securing the decent lodging and accommodation of persons engaged in hop picking within the district of such authority, shall be deemed to extend to and authorise the making of byelaws for securing the decent lodging and accommodation of persons engaged in the picking of fruit and vegetables.

APPLICATION OF PROCEEDS OF SALE OF MILITIA STOREHOUSES.

[45 Victoriæ, cap. 12.—19th June, 1882.]

An Act to amend the Law relating to the Application of Moneys arising from the Sale of Militia Storehouses.

Section 1 repeals so much of section 3 of "The Militia Law Amendment Act, 1854" (17 and 18 Vict., cap. 105), as requires the residue of the purchase money arising from the sale of any place provided for keeping militia stores to be invested in the public funds, and the interest thereof applied in aid of the county rate. Section 2 provides that any moneys which have been paid to and invested by or shall hereafter be paid to the treasurer of a county on account of such proceeds of sale, and which shall not be required for the purposes of the said Act, may be applied to any of the purposes to which money raised on the security of the county rate or stock is applicable, or may be invested as trust money, and the interest applied in aid of the county rate or stock, as directed by the justices of the county in

quarter sessions assembled. Section 3 gives the short title of this Act as "The Militia Storehouses Act, 1882."

COMMONABLE RIGHTS.

[45 & 46 Victoriæ, cap. 15.—19th June, 1882.]

An Act to provide for the better application of Moneys paid by way of Compensation for the compulsory acquisition of Common Lands and extinguishment of Rights of Common.

The preamble refers to the existing law as to the payment of money as compensation for the extinction of commonable rights, and as to dealing with such money, and the necessity for giving further powers to the Inclosure Commissioners. Section 1 gives the short title of the statute as "The Commonable Rights Compensation Act, 1882." Section 2 provides for the application of the compensation money by enacting that when such money has been paid to a committee of commoners, the committee or a majority in number of its members, or after twelve months has expired from the payment of the money to the committee, any three of the persons interested, may apply in writing to the Inclosure Commissioners to call a meeting of the persons interested to consider the application of the money. At such meeting a majority in number, and the majority in respect of interest of the persons present, may decide that the money is to be laid out in one or more of the following ways:—(*a*) In the improvement of the remainder of the common land for a portion of which the compensation money has been paid; (*b*) in defraying the expense of any proceedings under the Metropolitan Commons Acts or under the Inclosure Acts, 1845 to 1878, or of any application to Parliament for a private Bill or otherwise for the preservation and management of such common land as an open space; (*c*) in defraying the expense of any legal proceedings for the protection of such common land, or the commoners' rights over the same; (*d*) in the purchase of additional land to be used as common land; (*e*) in the purchase of land to be used as a recreation ground for the neighbourhood. Any such resolution is to bind the minority and all absent parties, and the Commissioners are to make an order under their seal for the payment to them of any expenses incurred by them in relation to the matter, and (subject to such payment) for the application of the money according to such resolution. Section 2 also provides that any land so purchased as aforesaid for use as common land is to be conveyed to and vest in trustees upon trusts for the persons interested, the appointment of trustees and other provisions being made by an order under the seal of the Commissioners, pursuant to resolutions to be passed at a special meeting of the persons interested, convened by the Commissioners. Every appointment of a new trustee or of new trustees, in pursuance of this Act, is to be subject to confirmation by the Commissioners under their seal, and upon such confirmation the land shall vest in the remaining and the newly appointed trustees without any conveyance. The Commissioners are to give notice of meetings under the Act, and to give directions for conducting them, and may, if they think fit, direct an

Assistant Commissioner to preside at the meeting. Any land purchased under this Act for a recreation ground is to be conveyed to and vest in the local authority for the district within which it is situate, and be held and managed by the local authority under the provisions as to recreation grounds contained in the Inclosure Acts, 1845 to 1878. Under section 3 any money paid or hereafter to be paid as compensation money for recreation grounds and field gardens is to be applied as provided by the Inclosure Acts, 1845 to 1878, as amended by "The Commons Act, 1879," with respect to the surplus rents arising from recreation grounds and field gardens respectively. In any case where money paid by way of compensation has before the passing of this Act been applied in any one or more of the ways authorised by this Act, section 4 provides for *post facto* action by the Commissioners and interested persons, so that the proceedings may be deemed to have been lawfully taken under this Act. Section 5 provides for the depositing of orders made under this Act, and section 6 exempts the New Forest from its operation.

DIVIDED PARISHES AND POOR LAW AMENDMENT.

[45 & 46 Victoriæ, cap. 58.—18th August, 1882.]

An Act to amend "The Divided Parishes and Poor Law Amendment Act, 1876," *and for other purposes.*

Section 1 provides that this Act may be cited as "The Divided Parishes and Poor Law Amendment Act, 1882," and that it is to be construed as one with the Act of the same title of 1876, and the Acts amending it. Section 2 enacts that isolated or detached parts of any parish wholly surrounded by any other parish are from and after 25th March, 1883, to be amalgamated with the latter parish, with the same consequences and limitations as if the amalgamation had been effected by order of the Local Government Board under the Act of 1876, and the part so treated is to be deemed in the same county as the parish with which it is united. Two or more isolated parts of parishes adjoining each other are to be deemed one for the purposes of the Act, and questions as to isolation or surrounding by another parish are to be determined by order of the Local Government Board. This section is not to apply to any parish situate wholly or partly in the metropolis. Section 3 authorises the Local Government Board to deal with a parish with which an isolated part has been amalgamated, and which is not a place separately maintaining highways, as if the amalgamation had been effected prior to the passing of "The Poor Law Act, 1879." Section 4 provides that detached parts with a population exceeding 300 may be made separate parishes at the discretion of the Local Government Board. Under section 5, notwithstanding anything contained in the Act of 1876, any alteration of an area made under this Act is to extend to alter the constitution of the school districts, unless the Education Department otherwise direct. Section 6 applies section 5 of the Act of 1876 to any parish in a highway district, although it may not be a parish for which a waywarden can be elected. Under section 7, for the purposes of the Act of 1876 and the Acts amending it, a riding or other division of a county having a separate court of quarter sessions, or for which a separate county

treasurer may be appointed, is to be deemed to be a separate county. The remaining clauses contain Poor Law amendments. By section 8 any wards formed or hereafter to be formed by the Local Government Board under the Public Health Acts of 1872 and 1875, for the election of guardians of the poor, and the number of guardians to be elected for such wards respectively, may be altered from time to time at the discretion of the Board. Section 9 provides for the adjustment of liabilities in asylum districts. Section 10 makes provision for separate rates for parts of parishes only if needed to give effect to any adjustment made by the Local Government Board; but by section 11 the Board is not compelled to make an adjustment in any case where the circumstances appear to them to render it inexpedient or unnecessary. Under section 12 a resolution of consent passed at a meeting of guardians or managers of a school district, after 14 days' notice to each member, is to be deemed equivalent to consent in writing. By section 13 the guardians of any union who send any pauper child to a school certified under 25 and 26 Vict., cap. 43, sec. 1, may pay reasonable expenses incurred in the maintenance of the child, not exceeding the amount sanctioned by the Local Government Board for pauper children sent to such school. Section 14 catalogues the enactments repealed by this statute.

ARTIZANS' DWELLINGS.

[45 and 46 Victoriæ, cap. 54.—18th August, 1882.]

An Act to amend the Artizans and Labourers' Dwellings Acts.

Section 1 gives the short title of the Act as "The Artizans' Dwellings Act, 1882." The first part consists of amendments of the Acts of 1875 and 1879, and the second part supplies some new provisions. Section 2 provides for the construction of this statute with the Artizans and Labourers' Dwellings Improvement Acts of 1875 and 1879. Section 3 recites that whereas the Act of 1875 requires an improvement scheme of a local authority to provide for as many persons of the working class as are displaced by it, in suitable dwellings in the same area or vicinity, unless there are special reasons to the contrary, and whereas by section 4 of the Act of 1879, this requirement may be satisfied, if the confirming authority authorise it, by the provision of accommodation outside the area or its vicinity, and further provision as to such accommodation is required, it is enacted: That where an improvement scheme comprises an area in the metropolis or city of London, the confirming authority may (on the application of the local authority, and on a report being made by the officer conducting the local inquiry directed by the confirming authority that it is expedient) in the provisional order authorising the scheme, dispense altogether with the obligation of the local authority to provide for the accommodation of the persons of the working class who may be displaced, but not exceeding one-half of the persons so displaced. In places elsewhere than in the metropolis or city of London the scheme shall, if the confirming authority so require (but not otherwise be obligatory on the local authority) provide accommodation for such number of those persons of the working class displaced in the area in suitable dwellings, either within or without the limits of the same area as the autho-

rity on a report made by the officer conducting the local inquiry may require. The power given to dispense with the obligation to provide for the displaced working classes to an extent not exceeding one-half the number displaced may be exercised upon application of the local authority by an order within 12 months after the passing of this Act, in any case where a scheme before the passing of this Act has been authorised by a confirming Act. Sections 4, 5, and 6 amend the Act of 1875 as to the valuation of land, and make other amendments. Section 8 gives power to local authority to purchase under specified conditions any building, although not in itself unfit for human habitation, so situate that by reason of its proximity to or contact with any other buildings, it stops ventilation, or otherwise makes or conduces to make such other buildings to be in a condition unfit for human habitation; or prevents proper measures from being carried into effect for remedying the evils complained of in respect of such other buildings. Section 9 amends section 7 of the Act of 1879. Section 10 provides for the defrayment of the expenses of the local authority; and section 12, in cases where dwellings have been reported unfit for human habitation, or where their removal as under this Act would be expedient, but where the local authority has failed to carry out the Acts, empowers the Metropolitan Board of Works to put in force the provisions of the Acts in respect of such premises or buildings, and if they think it expedient so to do, thereupon to proceed under section 12 of "The Artizans and Labourers' Dwellings Act (1868) Amendment Act, 1879," and that section is to apply as if it were enacted in this part of this Act and in terms made applicable to the duties of local authorities under this part of this Act.

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6. SPECIAL LEGISLATION FOR IRELAND.

PREVENTION OF CRIME.

[45 and 46 Victoriæ, cap. 25.—12th July, 1882.]

An Act for the Prevention of Crime in Ireland.

The preamble to the statute declares that whereas by reason of the action of secret societies and combinations for illegal purposes in Ireland the operation of the ordinary law has become insufficient for the repression and prevention of crime, it is expedient to make further provision for that purpose. The Act is divided into five parts: I. Providing for the trial of cases by a special commission; II. Referring to special powers and venue; III. Treating of offences against the Act; IV. Defining the general powers given to the executive; and V, containing supplemental provisions and definitions. Section 1 empowers the Lord Lieutenant from time to time to direct a Commission or Commissions to be issued for the appointment of a court or courts of Special Commissioners for the trial of persons committed for the following offences: (*a.*) Treason or treason-felony committed after the passing of this Act; (*b.*) Murder or manslaughter; (*c.*) Attempt to murder; (*d.*) Aggravated crime of violence against the person; (*e.*) Arson, whether by common law or by statute; (*f.*) Attack on dwelling-house; and whenever it appears to the Lord Lieutenant that a just and impartial trial cannot be had according to the ordinary course of

law, he may by warrant assign to any such court of Special Commissioners, the duty of sitting at the place named in the warrant and of there, without a jury, hearing and determining, according to law, the charge made, and of doing therein what to justice appertains. A Special Commission court is to consist of three judges of the Supreme Court of Judicature in Ireland (other than the Lord Chancellor), to be named in the commission, and they are to try in open court, according to the tenor of a warrant under this Act, all persons named in the warrant who may be brought before them for trial. The evidence taken on a trial before a Special Commission court, and the reasons, if any, given by the judges in delivering judgment, are to be taken down by a shorthand writer, who shall be sworn to take the same accurately to the best of his ability. A person tried by a Special Commission court is to be acquitted unless the whole Court concur in his conviction, and the judges in all cases of conviction are to give in open court their reasons for convicting. If a person tried by a Special Commission court is acquitted by such court, he is to be entitled to conveyance free of cost to any place he selects in the county in which he was committed for trial. The Lord Lieutenant is from time to time to provide for the payment of the reasonable expenses of witnesses, and in the case of poor persons charged before a Special Commission court with treason, treason-felony, or murder, for the payment of counsel required for their defence, and certified to be so required by such court. Nothing in this Act is to empower a Special Commission court to try a person for any offence, unless a judge and jury in Ireland would but for this section have had to try the person for the offence. Section 2 provides for an appeal from a Special Commission court to the Court of Criminal Appeal, and empowers the Court of Criminal Appeal after a hearing to confirm the conviction and sentence, or enter an acquittal, or to vary the conviction or sentence, but only by substituting a conviction for some less offence for which the Special Commission had jurisdiction on the trial to convict the appellant; the sentence is not to be increased. The conviction and sentence as confirmed or varied by the Court of Criminal Appeal is to have effect as if it were the conviction and sentence of the Special Commission court, and is to be deemed to be the sentence of a Special Commission court. If the appellant establishes want of jurisdiction in the Special Commission court, the Court of Criminal Appeal may quash the proceedings. The Court of Criminal Appeal is to have for the purpose of any appeal all the powers and jurisdiction of the Special Commission court. Under section 3 the Court of Criminal Appeal under this Act is to consist of the judges of the Supreme Court of Judicature in Ireland (with the exception of the Lord Chancellor), and any of those judges, not less than five, may sit and exercise the powers of the court, provided that a judge who, sat in the Special Commission court may not sit in the Court of Criminal Appeal on any appeal against a conviction or sentence by that Special Commission court to which he was a party. The determination of any appeal is to be according to the determination of a majority of the judges who heard the appeal. Sections 4 to 6 inclusive deal with the appointment of special jurors in criminal cases, the penalties for non-attendance to be imposed on such jurors, and provide for the advance of money for expenses of

witnesses in attending trials where the venue is changed. Sections 7 to 11 inclusive define the offences against the Act. Section 7 makes it an offence to use intimidation so as to cause persons to do that which they have a legal right to abstain from doing, or *vice versâ*, or to use it to persons in consequence of their having done what they had a legal right to do, or *vice versâ*, and "intimidation" in this Act includes any word spoken or act done in order to and calculated to put any person in fear of any injury or danger to himself, or to any member of his family, or to any person in his employment, or in fear of any injury to or loss of his property, business, or means of living. Under section 8 every person who in a proclaimed district—(*a*) takes part in any riot or unlawful assembly; or (*b*) within nine months after the execution of any writ of possession or decree for possession of any house or land, takes or holds forcible possession of such house or land or any part thereof; or (*c*) commits an aggravated act of violence against the person; or (*d*) commits an assault on any constable, bailiff, process server, or other minister of the law, while in the execution of his duty or in consequence thereof, is to be guilty of an offence against this Act. Section 9 declares every person to be guilty of an offence against the Act who knowingly—(*a*) is a member of an unlawful association as defined by this Act; or (*b*) takes part in the operations of an unlawful association as defined by this Act, or of any meeting thereof. Section 10 authorises the Lord Lieutenant to prohibit illegal meetings by service of notice on their promoters, by authorising two justices of the peace to attend at the meeting place and disperse those who assemble, those not dispersing when called on to do so, to be guilty of an offence against this Act, so, however, that the term of imprisonment awarded shall not exceed three months. A copy of every such order made by the Lord Lieutenant is to be laid before Parliament within fourteen days after the day on which it was made, if Parliament be then sitting, and if not, then within fourteen days after the next meeting of Parliament. Section 11 provides for the arrest of any person in a proclaimed district, if out of his place of abode at any time after one hour later than sunset and before sunrise under circumstances giving rise to a reasonable suspicion of a criminal intent. Section 12 provides for the arrest of strangers found under suspicious circumstances. Section 13 enables the Lord Lieutenant to order the seizure and forfeiture of any newspapers containing matter inciting to the commission of treason or of any act of violence or intimidation; notice of the order is to be served at the office of the newspaper, and every such order is to be published in the "Dublin Gazette," and laid before Parliament within thirty days if Parliament is then sitting, and, if not, within thirty days after its next sitting. Section 14 enables the Lord Lieutenant to issue warrants to the constabulary for searches for arms and illegal documents, and authorising them to use force, if necessary, in order to execute such warrant. Section 15 relates to the application of the Alien Act, 11 and 12 Vict., cap. 20, as if it had been passed at the date of the passing of this Act, and its expressions are to be construed accordingly. Section 16 gives power of summoning witnesses. Section 17 gives power to apprehend absconding witnesses. Section 18 enables the Lord Lieutenant to provide additional constabulary force in any district. Section 19 defines the power of the Lord Lieutenant

in ordering payments out of money granted by Parliament to witnesses for attending investigations of certain cases of murder or maiming, and also of payment of compensation to the personal representatives of the person murdered or to the person maimed or injured, or if he is dead to his personal representatives, the latter sum being, if the Lord Lieutenant think just, made a charge payable by the district in which the offence was committed, and in such instalments as the Lord Lieutenant may by warrant order. Section 20 contains definitions of terms, and the subjects of sections 21 to 35 are as follows: (21) punishment for offences against Act; (22) summary procedure for offences under Act; (23) proclamation of districts; (24) supplemental provisions as to proclamations and orders; (25) regulation as to warrants and notice of trial; (26) rota of judges; (27) regulations as to courts; (28) rules of procedure in schedule; (29) allowances to judges, witnesses, and others; (30) rules for procedure and matters to be prescribed; (31) powers of Act to be cumulative; (32) saving for trade unions; (33) saving for associations; (34) definition of "unlawful association"; (35) general definitions. Section 36 gives the short title of the Act as "The Prevention of Crime (Ireland) Act, 1882"; and section 37 gives it force until the expiration of three years next after its passing, and to the end of the then current session of Parliament, with due provision for the completion of all sentences and proceedings pending under the Act at that date.

7. MISCELLANEOUS.

REPLY POST CARDS.

[45 & 46 Victoriæ, cap. 2.—13th March, 1882.]

An Act to authorise the use of Reply Post Cards.

The object of this short Act is to meet a difficulty arising from the stipulation of "The Post Office Act, 1875," that the highest rate for an inland post card should not exceed ½*d.*, and section 2 provides that nothing in the Post Office (Duties) Acts, 1840 to 1875, or any of them, shall be deemed to prevent the issue of a reply post card, or the fixing of a rate of postage for a reply post card not exceeding double the rate charged for an ordinary post card.

PARCELS POST.

[45 & 46 Victoriæ, cap. 74.—18th August, 1882.]

An Act to amend the Post Office Acts with respect to the Conveyance of Parcels.

The preamble recites that an arrangement has been made with Treasury consent between the Postmaster-General and the railway companies for the conveyance of parcels. Section 2 lays down general principles for the remuneration to the companies, the arrangements to hold good for 21 years, subject to termination after that by 12 months' notice on either side. Section 3 defines the services to be rendered by the companies. Sections 4 to 6 refer to the calculation and apportionment of the receipts. Section 7 sets forth the conditions as to the conveyance of parcels. Section 8 provides that matters of

difference between the Postmaster-General and the railway companies shall be settled by arbitration in accordance with "The Railway Companies Arbitration Act, 1859." Section 9 prescribes rules for remuneration of companies which, though not parties to the original arrangement, take part in it. Sections 10 to 12 contain miscellaneous provisions; section 13 provides for the application of the Act to steam vessels, and section 14 for the application of Customs Acts to foreign parcels. Section 15 extends the operation of the Act to the Isle of Man and Channel Islands subject to certain provisions. The schedule gives the following table of weights and rates of parcels:—For an inland parcel of a weight not exceeding 1 lb., 3*d.*; exceeding 1 lb. and not exceeding 3 lbs., 6*d.*; exceeding 3 lbs. and not exceeding 5 lbs., 9*d.*; exceeding 5 lbs. and not exceeding 7 lbs., 1*s.*

BILLS OF SALE.

[45 & 46 Victoriæ, cap. 43.]

An Act to amend "The Bills of Sale Act, 1878."

A most important provision of this Act is that it makes all bills of sale for sums under 30*l.* absolutely void. The holder of a bill of sale will also be deprived of the preference which was given to him by the Act of 1878 over the ordinary creditors of a trader who becomes bankrupt. The Act sets forth the five classes of reasons which alone will make property liable to be seized under a bill of sale. They are (1) if the debtor make default in payment at the proper time of the sum borrowed, or in the performance of any agreement that is contained in the bill and is necessary for maintaining the security; (2) if he become a bankrupt or suffer the goods to be distrained for rent, rates, or taxes; (3) if he fraudulently remove the goods from the premises; (4) if he fail, without reasonable excuse, to produce upon demand of the lender the last receipt for rent, rates, and taxes; and (5) if execution be levied against the goods of the debtor under a judgment of law. When property is seized under a bill of sale, it is not to be removed or sold until after the expiration of five days; and during that time a judge, if he is satisfied that by payment of money or otherwise the cause of seizure no longer exists, may, on the application of the debtor, restrain the removal or sale, or make any other order that seems just.

PROTECTION OF ANCIENT MONUMENTS.

[45 & 46 Victoriæ, cap. 73.—18th August, 1882.]

An Act for the better protection of Ancient Monuments.

By section 2 power is given to the owner of any ancient monument to appoint the Commissioners of Works its guardians; by section 3 the Commissioners are empowered with Treasury consent to buy ancient monuments. Section 4 gives power to owners to bequeath such monument to the Commissioners, and power to the Commissioners to accept such gift, devise, or bequest. By section 5 inspectors it ancient monuments are to be appointed by the Treasury to report of the Commissioners on the condition of such monuments. Section 6 imposes penalties for injuring ancient monuments. A schedule gives a list of ancient monuments in the United Kingdom to which the Act applies.

ABSTRACTS OF PARLIAMENTARY AND OTHER OFFICIAL DOCUMENTS.

1. FINANCE, TAXATION, AND CURRENCY.

NATIONAL REVENUE AND EXPENDITURE.—The subjoined tables show the gross PUBLIC REVENUE and EXPENDITURE of the United Kingdom in the year ended 31st March, 1882:—

SOURCES OF REVENUE:—	£
Customs	19,287,000
Excise	27,240,000
Stamps	12,260,000
Land Tax	1,045,000
House Duty	1,680,000
Property and Income Tax	9,945,000
Post Office	7,000,000
Telegraph Service	1,630,000
Crown Lands (Net)	380,000
Interest on Advances for Local Works, &c., and on Purchase Money of Suez Canal Shares	1,219,262
Miscellaneous	4,136,019
Total Income	£85,822,281
Income for year estimated in Budget	£85,100,000
Excess of Income over Budget Estimate	£722,282

BRANCHES OF EXPENDITURE:—	£
Permanent Charge of Debt:—	
Interest (except as below) and Management of the Debt	21,393,802
Terminable Annuities	7,150,961
Interest of Exchequer Bills, &c.	105,115
New Sinking Fund	270,120
Trustee Savings Banks, Deficiency Annuity	41,836
Interest, &c., not forming part of the above Permanent Charge, viz.:—	
Interest on Loans for Local Purposes	473,495
Interest and Principal of Exchequer Bonds (Suez)	199,874
Interest on Stock Created for Loan to India	30,738
Other Charges on Consolidated Fund:—	
Civil List	407,589
Annuities and Pensions	306,835
Salaries and Allowances	93,407
Courts of Justice	587,124
Miscellaneous Services (Ordinary)	199,481
,, Localization of the Military Forces	70,000
Voted Supply Services:—	
Army Services (including Army Purchase)	16,309,584
,, ,, Charges on account of Troops in India	1,100,000
Navy Services	10,756,452
Grant to India (Afghan War)	500,000
Transvaal, Expenses connected with the	400,000
Zulu, &c., Wars	135,000
Miscellaneous Civil Services	16,419,038
Customs and Inland Revenue Departments	2,840,755
Post Office	3,606,800
Telegraph Service	1,366,000
Post Office Packet Service	708,542
Total Ordinary Expenditure	£85,472,556
Estimated on Budget and Supplementary Votes	£86,190,653
Less than Estimates by	718,097

CUSTOMS AND EXCISE.—The Produce of the two great sources of PUBLIC REVENUE, CUSTOMS and EXCISE, which together contribute considerably more than One-Half to the NATIONAL INCOME of the UNITED KINGDOM, was as follows in the financial year ending March 31, 1882:—

CUSTOMS DUTIES on Articles usually contributing not less than £1,000 Annually.	Gross Receipts. £	s.	d.
Beer, Mum, and Spruce.	2,874	9	5
—— Of other Sorts . .	4,101	8	2
Chicory	71,406	15	4
Cocoa, Cocoa Husks, and Chocolate . .	53,478	4	9
Coffee	194,333	4	0
Currants	325,609	15	6
Figs	34,842	12	3
Plate, Gold and Silver .	6,754	3	1
Plums, Dried or Preserved, French Plums and Prunelloes . .	3,109	12	6
Prunes	4,739	7	6
Raisins	143,355	3	3
Spirits, Colonial and Foreign:—			
Rum	2,240,786	0	0
Brandy	1,608,488	12	0
Geneva	111,686	19	2
Of other sorts . . .	265,325	11	0
Tea	3,978,344	5	10
Tobacco and Snuff . .	8,931,118	9	11
Wine	1,368,827	14	5
All other Articles . . .	2,448	12	11
Charges on deliveries from the Bonded Warehouses . . .	34,449	13	10
	£19,386,080	14	10
Duties collected at the Isle of Man . . .	48,991	17	7
Total Customs .	£19,435,072	12	5
Drawbacks, Repayments, &c. . . .	159,404	5	4
Net Produce . .	£19,275,668	7	1

EXCISE DUTIES.	Gross Receipts. £	s.	d.
Chicory	1,791	18	2
Licences, viz.:			
Auctioneers, Appraisers, &c.	81,262	0	0
Beer and Cider, and Beer and Wine . .	196,047	17	10
Brewers	149,908	19	0
Dog	343,051	7	6
Establishment, viz.:			
Armorial Bearings .	79,545	18	0
Carriages	553,069	16	0
Male Servants . .	136,410	15	0
Game	174,021	0	0
Gold and Silver Plate .	45,326	2	0
Gun	76,824	10	0

EXCISE DUTIES, contd.	Gross Receipts. £	s.	d.
Hawkers and Pedlars .	25,245	13	0
Medicine Vendors . .	4,691	5	0
Pawnbrokers . . .	33,840	0	0
Refreshment Houses .	6,194	9	6
Spirits:			
Distillers and Rectifiers	4,010	7	6
Dealers	121,736	12	9
Publicans, including Grocers in Scotland and Ireland . . .	1,483,807	15	3½
Tobacco	87,302	3	1¾
Wine and Sweets . .	75,610	8	4½
Other than the foregoing	8,950	15	8½
Beer	8,687,189	19	11½
Railways	798,364	4	8
Spirits	14,833,940	7	11
Total Excise . . .	£27,908,144	6	3¼
Deductions on account of Drawbacks, Discounts, Parliamentary Allowances, Repayments, &c. .	£737,346	12	11¼
Net Produce . .	£27,170,797	13	4

STAMPS.—The following table gives the gross receipts from Stamps in the United Kingdom during the year ended the 31st of March, 1882:—

Heads of Duty.	Gross Receipts. £	s.	d.
Probates of Wills and Letters of Administration	3,693,274	2	4
Legacy Duty	2,814,145	3	2
Succession Duty . . .	742,427	12	1
Total Probate and Legacy, &c., Duties	7,249,846	17	7
Deeds and other Instruments, not included under the following heads . . .	2,132,678	9	9½
Bills of Exchange . .	764,129	0	3
Bankers' Notes	435	9	6
Composition for the Duties on the Bills and Notes of the Banks of England and Ireland, and of Country Bankers .	127,574	13	6
Cards	14,381	18	0
Gold and Silver Plate .	77,001	3	5¾
Licences and Certificates	151,325	10	0
Marine Insurances . .	142,517	15	0
Medicine	145,266	0	6
Patents for Inventions .	198,172	5	0
Receipts, Drafts and other 1*d.* Stamps .	897,715	3	3

Heads of Duty.	Gross Receipts. £	s.	d.
District Audit	28,198	10	0
Total Stamps, exclusive of Fee Stamps	11,929,242	15	10½
Fee Stamps, viz.:			
Admiralty Court (Ireland) . . .	527	1	0
Bankruptcy Court (England) . . .	65,882	9	2
Bankruptcy Court (Ireland) . . .	4,086	12	6
Chancery Fund (Ireland) (Lunacy cases only). . .	637	6	8
Civil Service Commission	11,847	9	0
Companies Registration	32,112	9	8
Copyhold, Inclosure, and Tithe Commission	5,970	15	0
County Courts (Ireland)	28,558	15	9
Courts of Survey—Merchant Shipping	149	14	0
Judgments Registry Fund (Ireland) .	4,522	4	0
Judicature (England).	356,366	15	5
,, (Ireland) .	42,015	19	5
Land Court (Ireland) .	4,834	7	3
Land Registry (England).	840	13	10
Law Courts (Scotland)	5,145	2	6
London Gazette . .	27,283	17	0
Newspaper Registration	408	15	0
Patent Hearings and Disclaimers . .	350	15	0
Police Courts (Metropolitan Police District) . . .	9,122	12	0
Public Record . . .	801	5	6
Railway Commission .	166	2	6
Record of Title (Ireland)	37	4	0
RegisterHouse (Scotland).	39,056	13	3
Registration of Deeds (Ireland) .	11,666	10	9
Warrants for Letters Patent under the Great Seal . . .	1,058	0	0
Total Fee Stamps . .	£653,449	10	2
Total Stamps . .	£12,582,692	6	0½
Drawbacks, Discounts, Allowances, &c. .	£234,542	9	5
Net Produce .	£12,348,149	16	7½

NATIONAL REVENUE FROM 1870 TO 1882.—The following table shows the total gross Revenue in each of the financial years ended March 31, from 1870 to 1882, inclusive, and the proportion of receipts per head of population of the United Kingdom:—

Year ended March 31.	Revenue. £	Proportion per head of Population. £	s.	d.
1870	75,434,252	2	8	4
1871	69,945,220	2	4	5
1872	74,708,314	2	7	3
1873	76,608,770	2	8	2
1874	77,335,657	2	8	2
1875	74,921,873	2	6	3
1876	77,131,693	2	7	1
1877	78,565,036	2	7	6
1878	79,763,298	2	7	8
1879	83,115,972	2	9	2
1880	81,265,055	2	7	7
1881	84,041,288	2	8	7
1882	85,822,282	2	9	0

NATIONAL EXPENDITURE FROM 1870 TO 1882.—The following table shows the total amount of National Expenditure for each of the financial years ended March 31, from 1870 to 1882, inclusive, and the proportion of receipts per head of population of the United Kingdom:—

Year ended March 31.	Expenditure. £	Proportion per Head of Population. £	s.	d.
1870	68,864,752	2	4	0
1871	69,548,539	2	4	3
1872	71,490,020	2	5	0
1873	70,714,448	2	4	5
1874	76,466,510	2	7	7
1875	74,328,040	2	5	10
1876	76,621,773	2	6	10
1877	78,125,227	2	7	2
1878	82,403,495	2	9	3
1879	85,407,789	2	10	6
1880	84,105,754	2	9	3
1881	83,107,924	2	8	3
1882	85,472,556	2	8	10

NATIONAL DEBT.—The following table shows the total amount of the Funded Debt of the United Kingdom on the 31st of March, 1881, the Debt created and reduced in the year ended 31st March, 1882, and the balance at the latter date:—

	£	s.	d.
Total Funded Debt on 31st March, 1881 .	709,078,526	12	3
Debt created in the year ended 31st March, 1882 . . .	4,210,587	14	10
Total	713,289,114	7	1

	£	s.	d.
Debt reduced in year ended 31st March, 1882	3,790,566	16	7
Balance, being total Funded Debt on 31st March, 1882 . . .	709,498,547	10	6

The following table shows the state of the above Public Funded Debt of the United Kingdom on 31st March, 1882:—

Capital Funded Debt:—	Capitals. £	s.	d.
Great Britain.			
New Annuities, at 2½ per cent.	5,185,370	3	6
Exchequer Bonds, created per 16 Vict., c. 23, at 2½ per cent.	418,300	0	0
Total, at 2½ per cent .	£5,603,670	3	6
Debt due to the Bank of England, at 3 per cent.	11,015,100	0	0
Consolidated Annuities, at 3 per cent.	391,297,898	17	9
Reduced Annuities, at 3 per cent. . . .	91,742,402	4	6
New Annuities, at 3 per cent.	177,562,552	19	8
Total, at 3 per cent. .	£671,617,954	1	11
New Annuities, at 3½ per cent.	225,746	6	4
Total, Great Britain	£677,447,370	11	9
Ireland.	£	s.	d.
New Annuities, at 2½ per cent.	2,330	0	0
Debt due to the Bank of Ireland, at 3 per cent.	2,630,769	4	8
Consolidated Annuities, at 3 per cent..	4,665,411	9	2
Reduced Annuities, at 3 per cent. . . .	128,295	3	6
New Annuities, at 3 per cent.	24,624,371	1	5
Total, at 3 per cent. .	£32,048,846	18	9
Total, Ireland . . .	£32,051,176	18	9
Total Capital of the Funded Debt of the United Kingdom, on 31st March, 1882 .	709,498,547	10	6

CHARGES ON NATIONAL DEBT.—The following table shows the annual charges on the Funded Debt of the United Kingdom, in the year ended the 31st of March, 1882:—

	Annual Charge. £	s.	d.
Funded Debt	21,252,684	12	9
Terminable Annuities:			
Annuities, per 18 Vict., c. 18, expiring 5 April, 1885. . .	116,000	0	0
Annuities, per 23 & 24 Vict., c. 109, and subsequent Acts, expiring 5 April, 1885 (Fortifications) . .	589,722	0	0
Annuity, per 26 Vict., c. 14, expiring 5 April, 1885. . .	9,983	7	3
Annuities, per 32 & 33 Vict., c. 59, and 29 Vict., c. 5, expiring at various dates in 1885 (payable yearly)	3,617,845	0	0
Annuities, per 35 & 36 Vict., c. 68, expiring at various dates in 1885 (payable yearly), "The Military Forces Localization Act". . .	378,831	0	0
Annuities per 43 Vict., c. 15, expiring 20th March, 1885, "National Debt Act, 1880"	1,350,583	0	0
Red Sea and India Telegraph Company's Annuity, 25 & 26 Vict., c. 39, expiring 4th August, 1908 .	36,000	0	0
Sinking Fund Annuity on New 2½ per Cents., per 33 & 34 Vict., c. 71, s. 69 .	6,906	14	7
Annuities for Terms of Years, per 10 Geo. 4, c. 24, and 3 Will. 4, c. 14, expiring at various periods	24,490	1	6
Life Annuities, per 10 Geo. 4, c. 24, 3 Will. 4, c. 14, 16 & 17 Vict. c. 45, and 27 & 28 Vict. c. 43 . . .	967,210	13	4
Exchequer Tontine Annuities, per 29 Geo. 3, c. 41	10,000	0	0
Management:			
Great Britain . . .	214,389	9	7
Ireland	9,162	1	9
Total amount of charge on 31st March, 1882.	28,583,808	0	9

Charges on Debt created in the year ended 31st March, 1882:—	Annual Charge. £	s.	d.
Funded Debt:—			
Capital created, per Act 44 & 45 Vict., c. 55, "National Debt Act, 1881" .	82,936	19	2
	36,150	11	2
Terminable Annuities:—			
Annuity, per 44 & 45 Vict., c. 54, expiring 5th July, 1906, "Indian Loan Act, 1881"	115,864	10	0
Annuity, per 43 & 44 Vict, c. 36, expiring 15th May, 1908, "Savings Banks Act, 1880"	83,672	12	0
Sinking Fund, per 44 and 45 Vict., c. 55, expiring at various dates, "National Debt Act, 1881" .	42,105	17	6
Annuities for Terms of Years, per 10 Geo. 4, c. 24	2,030	0	6
Life Annuities, per 10 Geo. 4, c. 24, 16 & 17 Vict., c. 45, and 27 & 28 Vict., c. 43	76,697	1	0
Management increased .	3,660	5	8
Total Charge on Debt created in the year ended 31st March, 1882	443,117	17	0
Total Charge . . .	£29,026,925	17	9

COINAGE OF THE ROYAL MINT.—The amount of gold, silver, and copper (bronze) moneys coined at the Royal Mint in each year from 1863 to 1881 was as follows:—

Years.	Gold.	Silver.	Copper.
	£	£	£
1863	6,997,212	161,172	151,648
1864	9,535,597	535,194	18,069
1865	2,367,614	501,732	57,493
1866	5,076,676	493,416	50,624
1867	496,397	193,842	33,301
1868	1,653,384	301,356	16,328
1869	7,372,204	76,428	20,832
1870	2,313,384	336,798	32,704
1871	9,919,656	701,514	7,616
1872	15,261,442	1,243,836	47,413
1873	3,384,568	1,081,674	46,218
1874	1,461,565	890,604	65,632
1875	243,264	594,000	69,813
1876	4,696,648	222,354	61,450
1877	981,468	420,948	51,146
1878	2,265,069	613,998	17,024
1879	35,050	549,054	44,651
1880	4,150 052	761,508	19,264
1881	997,128	39,349	1,036,477

LOCAL TAXATION.—The following table shows the amount of direct and indirect taxation, and of other sources of receipts, for the purposes of local expenditure, in England and Wales, in the years 1867-68 and 1879-80:—

	1867-68.	1879-80.
	£	£
Local taxes:		
Direct, levied by rates	16,430,000	25,694,477
Indirect, levied by tolls, dues, &c.	4,350,000	4,574,322
Total ..	20,780,000	30,268,799
Other receipts:		
Rents, interest, &c. ..	1,354,000	764,462
Sales of property ..		536,478
Government contributions ..	1,225,000	2,733,846
Loans	5,517,000	13,717,911
Miscellaneous ..	1,565,000	4,985,826
Total ..	9,661,000	22,738,523
Total receipts	30,441,000	53,007,322

In Scotland the receipts in 1867-68 were 3,000,000*l.*, and in 1879-80 6,071,000*l.*; in Ireland in 1867-68 the total receipts were 3,055,000*l.*, and in 1879-80 3,968,142*l.* The totals for the United Kingdom were—

1867-68 .. .. 36,496,000*l.*
1879-80 .. .. 63,046,664*l.*

POOR RATES.—The following table shows the gross estimated and rateable value of rental assessed to the poor rates for England and Wales, and amount received and expended for relief of the poor:—

Years ended Lady-day.	Rateable Rental Assessed to the Poor Rate.	Total Amount of Poor Rates Received, including Receipts in aid of Poor Rates.	Expended.
	£	£	£
1867	—	10,692,188	10,905,173
1868	100,668,698	11,472,843	11,380,593
1869	—	11,776,153	11,773,999
1870	104,405,304	12,044,012	11,737,613
1871	107,398,242	12,121,440	12,092,741
1872	109,447,111	12,608,938	12,381,278
1873	112,317,603	12,657,943	12,426,566
1874	115,646,631	12,803,762	12,851,007
1875	119,079,589	13,194,446	12,694,208
1876	—	12,905,395	12,636,942
1877	124,587,474	12,948,174	12,998,237
1878	127,948,380	13,489,712	13,615,297
1879	131,021,019	13,871,118	13,693,184
1880	133,769,875	14,001,512	14,092,102
1881	135,645,473	14,340,592	14,390,262

Bank Rate.—The following Table shows the Average Minimum Rate per cent. of Discount charged by the Bank of England in each Month, in each Year from 1868 to 1881:—

Months.	1868.	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.
January	2	3	3	2½	3	4½	3½	4½	4½	2	3¼	4½	3	3 5/16
February	2	3	3	2½	3	3½	3½	3½	4	2	2	3	3	3¼
March	2	3	3	3	3	3½	3½	3½	3 7/8	2	2½	2¾	3	3
April	2	4	3	2¾	3¾	4	3½	3½	2⅞	2	3	2½	3	3
May	2	4½	3	2½	4⅝	5¼	4	3½	2	2⅞	3	2	3	2½
June	2	4	3	2⅜	3½	6¼	2¾	3½	2	3	2½	2	2¾	2¾
July	2	3¼	3½	2⅛	3¼	4⅞	3	3	2	2¼	3½	2	2½	2½
August	2	2¾	5	2	3½	3¾	3⅝	2¼	2	2¼	4½	2	2½	2 15/16
September	2	2½	3¼	2⅜	3¾	3¼	3	2	2	3	5	2	2½	4
October	2	2½	2½	2⅜	5⅞	6	3½	3¼	2	4½	5½	2	2½	3 3/16
November	2½	3	2½	4½	6⅝	8½	4½	3½	2	4⅞	5⅝	2⅝	2½	5
December	3	3	2½	3¼	5⅜	5¼	6	3	2	4	5	3	2⅞	5
Average for the Year	2¼	3¼	3⅛	2⅞	4⅛	4⅜	3¾	3¼	2⅛	2⅞	3⅜	2⅜	2¾	3⅛

Price of Stock.—The following Table shows the average price per 100*l.* of the Three per Cent. Consolidated Stock of the Public Funds of the United Kingdom in each Month, in each Year from 1868 to 1881:—

Months.	1868.	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.
January	92⅛	92⅞	92⅜	92⅜	92⅝	92 1/16	92⅛	92⅜	93⅞	95¼	95 3/16	95¾	97¾	98⅜
February	93⅛	93	92⅛	91⅛	92⅛	92¼	92¼	92 1/16	94 5/16	95 1/16	95 1/16	96¼	98⅛	98 15/16
March	93⅛	92⅞	92⅞	92	92⅜	92⅛	92	93	94 3/16	96 7/16	95¼	96⅛	97 7/16	99¼
April	93⅛	93⅛	93⅜	93	92⅛	93¼	92⅛	93⅛	94 1/16	95⅜	94 1/16	98⅛	98⅝	100 1/16
May	94⅛	93	94⅛	93⅛	93⅛	93⅛	93¼	94	96	94¼	96 3/16	98¼	99½	102 3/16
June	94⅞	92⅝	92¼	92	92⅜	92¼	92⅜	93	94¼	94⅛	95⅞	97¼	98⅜	100⅜
July	94⅛	93	91⅛	93¼	92⅛	92⅛	92⅛	94¼	95¼	94⅛	95 1/16	97⅛	98⅜	101⅛
August	94	93	90¼	93⅛	92	92⅛	92¼	94⅜	96 7/16	95⅛	94 13/16	97¼	97⅛	100¼
September	94⅛	92⅞	92	93⅛	92⅜	92⅛	92⅛	94⅜	95⅜	95⅛	94 1/16	97¼	97⅛	99⅛
October	94⅛	93⅛	92¼	92¼	92¼	92⅛	92¼	94 9/16	95 7/16	95¼	94¼	98	98 9/16	98 15/16
November	94⅜	93⅛	92¼	93¼	92⅜	92⅝	93⅛	94⅞	95¼	96 1/16	95 1/16	98¼	99 1/16	100¼
December	92⅜	92¼	91⅛	92¼	91⅝	92	91⅛	93⅜	94	95 1/16	94⅝	97⅝	98¼	99 1/16
Average for the Year	93⅜	92⅛	92¼	92¼	92⅛	92⅛	92⅛	93¼	95	95⅜	95 3/16	97½	98⅜	100

The following is a Return of the Quarterly Averages of the Weekly Liabilities and Assets of the Bank of England for 1866, 1871, 1876, 1879, 1880, and 1881:—

Years.	Quarter ended	Liabilities.			Assets.		
		Notes in Circulation.	Deposits.	Total.	Securities.	Bullion.	Total.
		£	£	£	£	£	£
1866	March 28	21,436,000	17,783,000	39,219,000	30,058,000	13,570,000	43,628,000
	June 27	24,588,000	22,198,000	46,786,000	37,384,000	13,571,000	50,955,000
	September 26	25,193,000	21,566,000	46,749,000	36,536,000	14,872,000	51,408,000
	December 26	23,728,000	22,740,000	46,468,000	33,110,000	17,478,000	50,588,000
1871	March	24,158,000	27,902,000	52,060,000	33,578,000	21,945,000	55,523,000
	June	24,705,000	28,762,000	53,467,000	32,391,000	24,192,000	56,583,000
	September	25,668,000	29,061,000	54,729,000	32,909,000	25,264,000	58,173,000
	December	25,625,000	28,010,000	53,635,000	33,827,000	22,952,000	56,779,000
1876	March	27,118,000	26,662,000	53,780,000	34,336,000	22,932,000	57,268,000
	June	27,917,000	28,610,000	56,527,000	32,513,000	27,120.000	59,633,000
	September	28,653,000	33,669,000	62,322,000	32,314,000	33,456,000	65,770,000
	December	28,565,000	33,043,000	61,608,000	33,440,000	31,272,000	64,712,000
1879	March	31,084,000	36,991,000	68,075,000	40,599,000	31,118,000	71,717,000
	June	29,512,000	37,164,000	66,676,000	36,170,000	33,695,000	69,865,000
	September	29,260,000	36,932,000	66,192,000	34,425,000	35,225,000	69,650,000
	December	28.296,000	35,650,000	63,946,000	37,016,000	30,041,000	67,057,000
1880	March	27,181,000	35,467,000	62,648,000	34,768,000	28,362,000	63,130,000
	June	27,295,000	33,738,000	61,033,000	35,889,000	28,245,000	64,134,000
	September	27,477,000	31,512,000	58,989,000	33,849,000	28,636,000	62,485,000
	December	26,829,000	31,350,000	58,179,000	34,839,000	26,406,000	61,245,000
1881	March	26,100,000	34,017,000	60,117,000	37,204,000	26,400,000	63,604,000
	June	26,859,000	32,757,000	59,616,000	36,343,000	26,366,000	62,709,000
	September	27,135,000	31,514,000	58,649,000	37,478,000	24,676,000	62,154,000
	December	26,237,000	28,633,000	54,870,000	37,096,000	20,876,000	57,972,000

NATIONAL DEBT FROM 1865 TO 1882.—The following table shows the total amount of the National Debt at the end of each financial year, 1865 to 1882:—

Financial Years ended 31st March	Funded Debt. Capital of Unredeemed Funded Debt, inclusive of Unclaimed Stock and Dividends.	Funded Debt. Estimated Capital of Terminable Annuities (Computed in 3 per Cent. Stock).	Amount of Unfunded Debt.	Total Amount of National Debt, inclusive of Unclaimed Stock and Dividends.
	£	£	£	£
1865	780,202,104	24,307,822	10,742,500	815,252,426
1866	773,941,190	23,833,621	8,187,700	805,962,511
1867	770,188,625	25,607,076	7,956,800	803,752,501
1868	741,844,981*	53,258,874	7,911,100	803,014,955
1869	741,112,640	51,913,623	9,896,100†	802,922,363
1870	741,514,681	49,667,479	6,761,500	797,943,660
1871	732,043,270	54,413,310	6,091,000	792,547,580
1872	731,756,962	52,286,775	5,155,100	789,198,837
1873	727,374,082	50,201,768	4,829,100	782,404,950
1874	723,514,005	48,024,178	4,479,600	776,017,783
1875	714,797,715	52,311,487	5,239,300	772,348,502
1876	713,657,517	49,078,792	11,401,800†	774,138,109
1877	712,621,355	46,549,819	13,943,800†	773,114,974
1878	710,843 007	43,644,057	20,603,000†	775,090,064
1879	709,430,593	40,345,454	25,870,100†	775,646,147
1880	710,476,359	36,222,976	‡27,344,900†	774.044,235
1881	709,078,526	37,547,666	22,077,500†	768,703,692
1882	709,498,547	35,539,693	18,007,700†	763,045,940

* Alterations in amounts of Capital of Unredeemed Funded Debt and of Terminable Annuities chiefly caused by the conversion, in 1868, of Stock into Terminable Annuities.

† Including outstanding Exchequer Bonds issued for raising money for the purchase of Suez Canal shares.

‡ Including 1,000,000*l.* borrowed in aid of Ways and Means.

RATES OF INCOME TAX 1842–1882.

Year.	Rate.	Year.	Rate.	Year.	Rate.
	s. d.		*s. d.*		*s. d.*
1842–3.. ..	0 7	1856–7.. ..	1 4	1870–1.. ..	0 4
1843–4.. ..	0 7	1857–8.. ..	0 7	1871–2.. ..	0 6
1844–5.. ..	0 7	1858–9.. ..	0 5	1872–3.. ..	0 4
1845–6.. ..	0 7	1859–60 ..	0 9	1873–4.. ..	0 3
1846–7.. ..	0 7	1860–1.. ..	0 10	1874–5.. ..	0 2
1847–8.. ..	0 7	1861–2.. ..	0 9	1875–6.. ..	0 2
1848–9.. ..	0 7	1862–3.. ..	0 9	1876–7.. ..	0 3
1849–50 ..	0 7	1863–4.. ..	0 7	1877–8.. ..	0 3
1850–1.. ..	0 7	1864–5.. ..	0 6	1878–9.. ..	0 5
1851–2.. ..	0 7	1865–6.. ..	0 4	1879–80 ..	0 5
1852–3.. ..	0 7	1866–7.. ..	0 4	1880–1.. ..	0 6
1853–4.. ..	0 7	1867–8.. ..	0 5	1881–2.. ..	0 5
1854–5.. ..	1 2	1868–9.. ..	0 6	1882–3.. ..	0 6½
1855–6.. ..	1 4	1869–70 ..	0 5		

Notes.—(*a*). From 1853-4 to 1862-3 a lower rate was charged on incomes from 100*l.* to 150*l.* as follows:—1853-4 at 5*d.*; 1854-5 at 10*d.*; 1855-6 at 11½*d.*; 1856-7 at 11½*d.*; 1857-8 at 5*d.*; 1858-9 at 5*d.*; 1859-60 at 6½*d.*; 1860-61 at 5*d.*; 1861-2 at 6*d.*; and 1862-3 at 6*d.* From 1863 to 1876 incomes under 100*l.* were free of taxation, and there was only one rate for all incomes above that sum. In 1876 the point of exemption was raised to 150*l.*, and incomes below that amount have since been free of income tax, while for all incomes under 400*l.* no tax is paid upon the first 120*l.*

2. GENERAL COMMERCE AND NAVIGATION.

NAVIGATION RETURNS.—The subjoined table shows the tonnage of British and Foreign vessels (sailing and steam) entered and cleared, *with cargoes*, at ports in the United Kingdom, from and to foreign countries and British Possessions, from 1863 to 1881 :—

Years.	Entered.			Cleared.		
	British.	Foreign.	Total.	British.	Foreign.	Total.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1863 ..	7,302,039	3,835,319	11,137,358	7,961,008	3,926,797	11,887,805
1864 ..	7,813,179	3,488,931	11,302,110	8,596,234	3,576,540	12,172,774
1865 ..	8,356,914	3,801,780	12,158,694	9,056,729	3,770,422	12,827,151
1866 ..	9,215,820	4,061,370	13,277,190	9,954,147	4,055,947	14,010,094
1867 ..	9,356,814	3,984,634	13,341,448	10,586,058	4,261,523	14,847,581
1868 ..	9,572,450	4,279,207	13,851,657	10,902,171	4,570,848	15,473,019
1869 ..	10,042,182	4,444,518	14,486,700	11,313,757	4,603,227	15,916,984
1870 ..	10,308,952	4,601,790	14,910,742	11,934,087	4,779,851	16,713,938
1871 ..	11,250,120	5,205,222	16,455,342	13,396,583	5,650,872	19,047,455
1872 ..	12,139,805	5,766,135	17,905,940	13,574,471	5,673,881	19,248,352
1873 ..	12,474,912	6,320,145	18,795,057	13,653,030	5,486,335	19,139,365
1874 ..	12,751,128	6,330,278	19,081,406	14,010,786	5,742,701	19,753,487
1875 ..	12,852,351	6,187,577	19,039,928	14,454 989	5,958,750	20,413,739
1876 ..	13,672,122	7,354,549	21,026,671	15,201,602	6,309,111	21,510,713
1877 ..	14,894,448	7,237,176	22,131,624	15,358,033	5,837,323	21,195,356
1878 ..	14,513,688	6.804,558	21,318,246	15,783,488	5,798,200	21,581,688
1879 ..	15,039,579	6,059,765	21,099,344	17,095,146	5,754,211	22,849,357
1880 ..	17,018,011	6,975,269	23,993,280	18,867,857	6,817,813	25,685,670
1881 ..	16,864,668	6,360,040	23,224,708	19,605,532	6,731,161	26,336,693

IMPORTS INTO THE UNITED KINGDOM.—The following table gives the quantities of the chief articles imported into the United Kingdom in the year ended the 31st of December, 1881 :—

Articles.		Quantity.
Animals :—		
Oxen, Bulls, Cows, and Calves	No.	319,374
Sheep and Lambs	,,	935,144
Bacon and Hams	Cwts.	4,627,484
Beef	,,	1,068,599
Bones, except Whalefins	Tons	71,477
Brimstone	Cwts.	811,580
Bristles	Lbs.	2,319,509
Butter	Cwts.	2,047,341
Candles, Stearine	,,	144,380
Caoutchouc	,,	172,077
Cheese	,,	1,840,090
Clocks	No.	863,965
Cocoa	Lbs.	22,451,834
Coffee	Cwts.	1,229,003
Corn, Wheat	,,	57,147,933
—— Barley	,,	9,805,944
—— Oats	,,	10,324,119
—— Maize	,,	33,480,846
—— Other kinds	,,	4,279,965
—— Flour of Wheat	,,	11,357,381
—— —— Of other kinds.	,,	239,365
Total of Corn	,,	126,635,553
Cotton, Raw	,,	14,991,682
Dyeing or Tanning Stuffs :—		
Cochineal, Granilla, and Dust	Cwts.	30,017
Cutch and Gambier	Tons	33,011
Garancine	Cwts.	1,857
Indigo	,,	81,088
Madder	,,	12,493
Madder Root	,,	5,636
Shumach	Tons	13,096
Valonia	,,	26,795
Eggs	No.	756,719,160
Fish	Cwts.	1,530,219
Flax and Hemp :—		
Flax, Dressed and Undressed	,,	1,410,177
Tow or Codilla of Flax and Hemp	,,	487,696
Hemp and other like Substances (except Jute), Dressed and Undressed	,,	1,389,851
Jute	,,	4,928,805
Fruits :—		
Currants	,,	1,189,830
Raisins	,,	568,628
Oranges and Lemons	Bush.	3,835,103
Glass of all Kinds	Cwts.	1,283.119
Guano	Tons	50,505
Gutta-percha	Cwts.	68,445
Hair :—		
Goats' Hair or Wool	Lbs.	10,059,570
Hides, Tanned and Untanned	Cwts.	1,475,634

Articles.		Quantity.
Hops	Cwts.	147,559
Lard	,,	854,322
Leather Gloves	Pairs	15,058,104
Meat, Salted or Fresh	Cwts.	178,256
—— Preserved, other than Salted	,,	575,482
Metals:—		
Copper Ore and Regulus	Tons	147,190
Copper, Unwrought and part Wrought, and old Copper	Cwts.	690,640
Iron, in Bars	Tons	111,511
Iron and Steel, Wrought or Manufactured	Cwts.	3,506,926
Lead, Pig and Sheet	Tons	93,559
Tin, in Blocks, Ingots, Bars, or Slabs, and Regulus	Cwts.	406,200
Zinc, Crude, in Cakes	Tons	46,079
—— Manufactures	Cwts.	386,067
Oil, Fish	Tuns	18,030
— Palm	Cwts.	826,891
— Cocoa Nut	,,	248,412
— Olive	Tuns	29,864
— Seed	,,	17,102
— Turpentine	Cwts.	285,492
Oil Seed Cake	Tons	221,100
Paper, for Printing or Writing	Cwts.	189,879
Petroleum, Unrefined	Galls.	865,872
—— Refined	,,	58,371,386
Pork	Cwts.	381,526
Potatoes	,,	4,034,673
Pyrites of Iron or Copper	Tons	542,378
Rags and Paper-making Materials:—		
Rags	,,	26,773
Esparto and other Materials	,,	238,043
Rice, not in the Husk	Cwts.	8,500,062
—— in the Husk	Qrs.	—
Rosin	Cwts.	1,131,443
Saltpetre	,,	247,127
—— Cubic Nitre	,,	1,099,789
Seeds:—		
Clover and Grass	,,	278,518
Cotton	Tons	232,199
Flax or Linseed	Qrs.	1,823,808
Rape	,,	367,444
Silk Knubs or Husks and Waste	Cwts.	54,119
Silk, Raw	Lbs.	2,904,580
—— Thrown	,,	131,836
Skins:—		
Sheep and Lamb, Undressed	No.	6,475,264
—— Tanned, Tawed or Dressed	,,	6,785,751
Seal	,,	700,898
Goat, Undressed	,,	2,263,542
—— Tanned, Tawed or Dressed	,,	8,983,237
Spices:—		
Cinnamon	Lbs.	1,739,365
Pepper	,,	20,795,087
Of all other sorts	,,	16,675,500

Articles.		Quantity.
Spirits:—		
Rum	Pf. Gals.	4,816,887
Brandy	,,	2,351,039
Other Foreign and Colonial Spirits	,,	1,324,298
Total of Spirits	,,	8,492,224
Sugar, Refined and Sugar Candy	Cwts.	2,790,464
—— Raw	,,	18,651,383
—— Molasses	,,	286,034
Tallow and Stearine	,,	1,192,075
Tea	Lbs.	209,801,522
Teeth, Elephants', Sea-Cow, and Sea Horse	Cwts.	12,377
Tobacco, Manufactured, Cigars, and Snuff	Lbs.	3,084,590
—— Unmanufactured	,,	48,195,897
Wine	Gals.	16,297,033
Wood and Timber:—		
Hewn	Loads	1,871,966
Sawn or Split	,,	3,673,407
Staves	,,	118,688
Mahogany	Tons	42,412
Wool,—Sheep, Lamb, Alpaca, and the Llama Tribe	Lbs.	450,141,735
Woollen Rags	Tons	35,265
Woollen and Worsted Yarn:—		
Berlin Wool and Yarn used for Fancy Purposes	Lbs.	663,922
Yarn for Weaving	,,	10,068,329
Yeast, Dried	Cwts.	206,687

EXPORTS OF HOME PRODUCE FROM THE UNITED KINGDOM.—The following table shows the quantities of the chief articles of British and Irish produce and manufactures exported from the United Kingdom in the year ended the 31st of December, 1881:—

Principal Articles.		Quantity.
Alkali	Cwts.	6,809,400
Animals: Horses	No.	6,108
Arms and Ammunition:—		
Firearms (Small)	No.	252,122
Gunpowder	Lbs.	14,363,000
Bags, Empty	Dozs.	5,471,683
Beer and Ale	Brls.	421,651
Books, Printed	Cwts.	109,990
Butter	,,	32,945
Candles, of all sorts	Lbs.	5,071,700
Carriages, Railway	No.	2,677
Cement	Cwts.	6,354,100
Cheese	,,	12,378
Coals, Cinders, and Fuel	Tons	19,587,063
Cordage and Twine	Cwts.	131,081
Corn: Wheat	,,	468,506
—— Wheat Flour	,,	99,956
Cotton Yarn	Lbs.	254,939,900

Principal Articles.		Quantity.
Cotton Manufactures:—		
Piece Goods, White or Plain	Yds.	3,361,298,600
——— Printed, Checked, or Dyed	,,	1,386,337,500
———, of Mixed Materials	,,	29,637,200
Total of Piece Goods	,,	4,777,273,300
Stockings	Doz. Prs.	1,682,871
Thread for Sewing	Lbs.	15,471,800
Fish: Herrings	Brls.	805,170
Glass: Plate	Sq. Ft.	2,809,990
——— Flint	Cwts.	132,556
——— Common Bottles	,,	642,333
——— Of other Sorts	,,	128,034
Hats of all Sorts	Dozs.	1,025,931
Leather, Tanned, Unwrought	Cwts.	181,360
—— Wrought, Boots and Shoes	Doz. Prs.	554,255
—— of other Sorts	Lbs.	2,087,512
Linen and Jute Yarn:		
Linen Yarn	,,	18,250,200
Jute Yarn	,,	18,069,900
Linen and Jute Manufactures:—		
Linen Manufactures:		
White or Plain	Yds.	165,217,600
Printed, Checked, or Dyed	,,	5,487,100
Sailcloth and Sails	,,	3,306,700
Total of Piece Goods	,,	174,011,400
Thread for Sewing	Lbs.	2,590,200
Jute Manufactures	Yds.	204,296,200
Metals:—		
Iron, Old, for remanufacture	Tons	123,725
—— Pig, and Puddled	,,	1,482,354
—— Bar, Angle, Bolt, and Rod	,,	294,361
—— Railroad, of all Sorts	,,	820,800
—— Wire	,,	75,129
—— Hoops, Sheets, and Boiler Plates	,,	304,925
—— Tinned Plates	,,	243,381
—— Cast, wrought, and all other manufactures	,,	291,844
—— Steel, unwrought	,,	167,423
—— Manufactures of Steel, or of Steel and Iron combined	,,	16,373
Total of Iron and Steel	,,	13,820,315
Copper, Unwrought:—		
Ingots, Cakes or Slabs	Cwts.	373,993

Principal Articles.		Quantity.
Copper, Wrought or partly Wrought:—		
Mixed or Yellow Metal	Cwts.	332,944
Of other Sorts	,,	318,585
Brass of all Sorts	,,	93,139
Lead, Pig, Sheet, and Pipe	Tons	42,994
Tin, Unwrought	Cwts.	96,011
Zinc, Wrought and Unwrought	,,	156,421
Oil, Seed	Gals.	13,383,700
Paper (other than Hangings)	Cwts.	555,219
Salt	Tons	1,006,230
Silk Manufactures:—		
Broad Piece Goods	Yds.	7,051,450
Soap	Cwts.	353,756
Spirits, British	Gals.	2,782,293
Sugar, Refined	Cwts.	909,177
Wool, Sheep and Lambs'	Lbs.	14,068,900
Woollen and Worsted Yarn	,,	29,731,400
Woollen and Worsted Manufactures:—		
Cloths, Coatings, &c., Unmixed and Mixed	Yds.	55,679,400
Flannels, Blankets, Blanketing, and Baizes	,,	15,378,200
Worsted Stuffs, Unmixed and Mixed	,,	192,106,100
Carpets and Druggets	,,	9,711,200

Export Markets of the United Kingdom.—The following table, compiled from Returns of the Board of Trade, gives the declared value of the British and Irish produce exported from the United Kingdom to Foreign countries and British possessions in the year ended the 31st of December, 1881, first taking the exports to foreign countries:—

I. Foreign Countries.

Countries.	Value. £
Russia, Northern Ports	2,739,820
——— Southern Ports	372,541
Sweden and Norway	1,676,038
Denmark Proper and Iceland	419,917
——— Danish West Indies	9,859
Germany	11,845,475
Holland	6,372,916
——— Java, and other Possessions in the Indian Seas	21,201
Belgium	6,462,306
France	13,115,636
——— Algeria	13,996
——— Possessions in Senegambia	12,584
——— Possessions in India	90
Portugal	447,153
——— Azores and Madeira	21,165

Countries.	Value. £
Spain and Balearic Islands	739,213
—— Canary Islands	28,421
—— Fernando Po	3,194
Spain, West India Islands	624,909
—— Philippine Islands	23,345
Italy	886,875
Austrian Territories	198,593
Greece	137,538
Roumania	103,887
Turkey	509,906
Egypt	171,795
Morocco	55,747
United States	6,986,749
Mexico	78,145
Central America	25,940
Haiti and San Domingo	15,443
New Granada (United States of Columbia)	46,458
Venezuela	8,088
Ecuador	8,014
Brazil	258,018
Uruguay	23,361
Argentine Confederation	73,857
Chili	165,557
Peru	135,996
China (exclusive of Hong Kong)	269,213
Japan	327,641
Western Coast of Africa (exclusive of French and Spanish Possessions separately stated)	185,652
Other Countries	121,248
Total to Foreign Countries	£55,743,500

II. British Possessions.

Channel Islands	204,115
Gibraltar	72,639
Malta	202,479
North American Colonies	896,715
West India Islands and Guiana	321,537
British Honduras	20,934
Australia	2,604,473
British India	1,808,956
The Straits Settlements	179,690
Ceylon	42,551
Hong Kong	185,592
Mauritius	43,091
Cape of Good Hope and Natal	618,985
West Africa Settlements	36,309
Possessions on the Gold Coast	32,912
Other Possessions	45,619
Total to British Possessions	7,316,597
Total to Foreign Countries and British Possessions	£63,060,097

Our Import Trade.—The value of the imports of foreign and colonial merchandise imported into the United Kingdom during the year 1881, amounted to 397,022,000*l*., being 14,000,000*l*., or 3·4 per cent., below the total of last year, which was 411,229,000*l*., the highest on record. The articles which, by a diminished importation to the extent of more than a million in value each, have mainly brought about this result are:—Animals (living); butter; coffee; corn, oats; potatoes; silk ribbons; wood, sawn; woollen manufactures. The only article the import value of which has increased by the like amount during the past year is sugar unrefined. Dividing the imports into groups of articles of a like character for the convenience of comparison and analysis, it is found that in food products the total decrease in the value of foods retained for consumption is about 5¾ millions. Of this amount nearly 5½ millions or 5·0 per cent. are due to such articles as are produced in the United Kingdom, the most prominent of which are, animals (living), butter, corn, grain, potatoes, whilst there is only a decrease of a quarter of a million or 0·3 per cent. on those products that are not of home cultivation.

Exports of Foreign and Colonial Produce.—The total value of the articles of foreign and colonial merchandise exported from the United Kingdom in the year 1881 was 63,060,097*l*., being a decrease of 293,923*l*. upon the value of similar exports in 1880, when the total amounted to 63,354,020*l*. The following table shows the destination, and gives the value of the exports in 1880 and 1881:—

	1880. £	1881. £
To Foreign Countries	57,080,630	55,743,500
To British Possessions	6,273,390	7,316,597

Exports of Home Produce and Manufactures.—The value of the produce and manufactures of the United Kingdom exported in 1881 was as follows:—

	£
To Foreign Countries	154,658,083
To British Possessions	79,364,595
Total	234,022,678

Showing an increase of 10,962,232*l*. upon the value of similar exports in 1880, or 4·9 per cent., the increase in the value of goods shipped to foreign countries amounted to 6,851,816*l*., or 4·6 per cent., and to our colonies, dependencies, and possessions, 4,110,416*l*., or 5·5 per cent. more than in 1880. In 1872 our total exports amounted to 256,257,347*l*., 195,701,350*l*., or 76·4 per cent., was the proportion shipped to foreign countries, and 60,555,997*l*. or 23·6 per cent., to British possessions, yet during the past year, out of a total of 234,022,678*l*., goods to the value of 154,658,083*l*., or 66·1 per cent., have been shipped to foreign countries, and 79,364,595*l*., or 33·9 per cent., to our own possessions.

3. TRADE AND AGRICULTURE.

BEER.—The following table shows the number of barrels of beer charged with duty in the year ended 31st March, 1882, as returned by the Commissioners of Inland Revenue:—

Brewed by		Total.
Brewers for sale.	Other brewers.	
Barrels.	Barrels.	Barrels.
24,555,755	182,358	24,738,113
1,087,476	524	1,088,000
2,044,331	82	2,044,413
27,687,562	182,964	27,870,526

The Commissioners report that this amount fell short of their estimate, and they account for the fact in several ways, but principally attribute it to the improved habits of the people. On this point they report in the following terms:—"Temperance principles seem to be influencing certain classes of the population largely, the past year having been apparently one of unusual progress in this direction. This movement has been greatly encouraged and promoted by the erection of coffee taverns; and when we mention that between 30 and 40 limited liability companies for carrying on coffee taverns have been formed in various places during the past year, and that over 100 new establishments have been opened in the metropolis, some of them on an extensive and expensive scale, it will be seen that the success of such enterprises must sensibly lessen the consumption of alcoholic drinks. The manufacture of temperance drinks has also been exceedingly brisk; and, whether from a prevailing demand for such beverages, or from a love of novelty on the part of the public, an unprecedented number of them have been advertised. Some of these contain no alcohol whatever, but in others, such as "ginger ale," a certain amount of spirit is generated by fermentation, but we are careful to insist upon the conditions that they shall not be made from malt and hops to resemble ordinary table beer, and shall not contain more than 3 per cent. of proof spirit." The number of licences for brewing for domestic use taken out during 1881 was 110,025. The smaller class of farmers, whose dwelling houses are valued at not more than 10*l.* per annum, have largely availed themselves of the benefit which the act confers upon them by brewing for themselves and their labourers under a 6*s.* licence. Artizans and factory workers, who have in many places to pay more than 10*l.* per annum for their houses, have been enabled to participate in the advantages of domestic brewing by the new 9*s.* licence for houses not exceeding 15*l.* of annual value. 6,700 of the private brewing licences are of this description. The Board of Trade accounts show the following quantities of beer shipped in each of the last two years ended December:—

In 1880	412,192 barrels.
1881	421,177 ,,

COTTONS.—Cotton yarn was exported in 1881 to the extent of 254,939,900 lbs., valued at 13,165,053*l.*, against 215,544,800 lbs., valued at 11,901,623*l.* in 1880, 18·3 per cent. more in quantity, but only 10·6 per cent. more in value. There is a falling off shown in the shipments to Russia and British India, but large increases in those to Germany, Belgium, Italy, Roumania, and Turkey. The quantity of cotton piece goods exported in 1880 was by far the largest on record, although on at least two occasions the value had been exceeded. The shipments during 1881 have, however, been far in excess of those of 1880, and although it cannot be said that the value has increased in a proportionate ratio, yet it amounts to more than that of any previous year. The total quantity is 4,777,273,300 yards, valued at 59,103,921*l.*, against 4,495,645,000 yards, valued at 57,678,084*l.*, an increase of 6·2 per cent. in quantity, and 2·5 per cent. in value.

WOOLLENS.—The exports of woollen and worsted yarn in 1881 increased in quantity from 26,464,300 lbs. to 29,731,400 lbs. or 12·3 per cent., but the price declined so much during the year that the value fell from 3,344,740*l.* to 3,225,696*l.*, or 3·6 per cent. Woollen cloths were exported to the extent of 55,679,400 yards, valued at 7,552,654*l.*, against 50,000,200 yards valued at 6,736,721*l.*, the increase in quantity being chiefly to Belgium, Chili, Peru, British North America, and India. The exports of worsted stuffs to Germany, Holland, and the United States fell off considerably, but were larger as regards Belgium, France, and Italy, and the total amounts to 192,106,100 yards, valued at 7,237,504*l.*, against 189,940,700 yards, valued at 7,241,156*l.* Blankets and carpets show about the same amounts as in 1880, although there was a large falling off in the shipments of carpets to the United States, but a corresponding increase to British North America and Australia. Flannels increased from 6,697,800 yards to 9,027,900 yards, and the total value of woollen and worsted goods (exclusive of yarn) amounts to 18,128,756*l.* against 17,265,177*l.*, an increase of 5 per cent.

SOURCES OF OUR COAL SUPPLY.—The following is a comparison of the production of coal in the respective coal-yielding districts in the two years 1871 and 1881, drawn from the official statements of the mining inspectors, and slightly altered in detail:—

	1871. Tons.	1881. Tons.
Durham and Northumberland ..	29,190,116	35,592,420
Cumberland ..	1,423,661	1,769,213
Yorkshire	12,801,260	18,287,141
Derbyshire	5,360,000	8,508,923
Nottinghamshire ..	2,469,400	4,758,080
Warwickshire ..	723,600	1,133,419
Leicester	699,900	1,145,265
Stafford and Worcester	14,281,250	14,858,070
Lancashire	13,851,000	18,499,810
Cheshire	975,000	782,000
Shropshire	1,350,000	892,500
Gloucester	1,412,297	1,361,396
Somerset	673,878	731,754
Monmouth	4,915,525	5,412,840
South Wales ..	9,120,000	16,029,125
North Wales ..	2,500,000	4,300,606
Scotland	15,438,291	20,822,055
Ireland	165,750	127,585

In the ten years bridged by the comparison the total production of coal rose from 117,352,028 tons in the year 1871 to 154,184,300 tons last year, quantities slightly differing from the total of the details above given, because of the difficulty of the inclusion or exclusion in some of the coalfields of small amounts produced in detached portions. The table above shows that to this enormous output the great northern coalfield contributed a quarter ten years ago, and though it has added more than six million tons to its output, it yields now less than a quarter. Yorkshire, on the other hand, produces more than its proportion in the last decade, but the vast coalfield of South Wales has made a still more marked stride, adding the largest proportion of all the large coal-producing districts. Scotland extends its production by five million tons; the small yield of Ireland slightly sinks in the decade, as also does that of Gloucester; but Warwickshire, Nottinghamshire, Derbyshire, and Lancashire have large increases; and it is apparent that it is only scattered districts that yield less, while throughout the great bulk of the coalfield the production has gone on enormously rising, if in varying proportions. It is worthy of notice that in the decade the number of miners has been increased in even a greater ratio than that of coal. There were 370,881 persons employed in and about the mines in 1871 and 495,477 last year, the *maximum* number being reached in 1874, when 538,829 were so employed. Thus the average production of the miners was lowered during the first three or four years, during which prices and wages rose, and since that time there has been an increase of the average production. It is still, however, lower than it was ten years ago. In 1871 every person employed in and about the mines produced on an average 316 tons of coal; but last year every person produced only 311 tons on the average.

TEA.—The importations of Tea have increased in quantity from 206,971,000 lbs. in 1880 to 209,801,000 lbs. in 1881, or 1·3 per cent., but the value has decreased from 11,613,000*l.* in the former to 11,208,000*l.* in the latter year, or 3·4 per cent. The importation of tea from British India has been practically stationary, the figures for the two years being, for 1880, 45,530,000 lbs., valued at 3,087,000*l.*, and for 1881, 45,614,000 lbs., valued at 3,072,000*l.*

SPIRITS.—The decrease in the importation of spirits taken collectively, noticed in the last report, has been continued in the year 1881. The figures of 1880 show an import of 10,050,000 gallons, those of 1881 of 8,492,000, a decrease of 1,558,000 gallons, or 15·5 per cent. Of this total decrease a diminished importation of Brandy accounts for 655,000 gallons, and of Rum there has been a decrease of 1,290,000. Geneva and Plain Spirits show an increase on the year of 380,000 gallons; other mixed spirits have increased to the extent of 7,000 gallons.

WINE.—The imports of Wine have fallen from 17,385,000 gallons in 1880 to 16,297,000 in 1881, or 6·2 per cent. The decrease is principally confined to white wine, the import of red wine being comparatively unaffected, being for 1880 and 1881 respectively 9,567,000 gallons and 9,528,000 gallons.

COALS.—Coals, cinders, and patent fuel were exported in 1881 to the extent of 19,587,063 tons valued at 8,785,950*l.* against 18,719,971 tons, valued at 8,372,933*l.*, an increase of 4·6 per cent. in quantity, and 4·9 per cent. in value. No large increase or decrease is shown in the case of any particular country, and with regard to coals, &c., taken by steamers for their use on their voyages to foreign countries, the quantity increased from 4,926,076 tons to to 5,227,588 tons, or 6·1 per cent.

IRON AND STEEL.—The shipments of iron and steel during 1881 amounted to 3,820,315 tons, valued at 27,590,908*l.*, against 3,792,993 tons, valued at 28,390,316*l.*, an increase in quantity of 27,322 tons, or 0·7 per cent., but a decrease in value of 799,408*l.*, or 2·9 per cent.

AVERAGE GAZETTE PRICES OF BRITISH WHEAT, BARLEY, and OATS, per IMPERIAL QUARTER in EACH MONTH in 1867, 1870, 1873, 1876, 1879, 1880, and 1881.

MONTHS.	1867.	1870.	1873.	1876.	1879.	1880.	1881.
	WHEAT.						
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
January ..	61 4	43 8	55 9	44 9	39 3	45 11	42 5
February ..	60 10	41 3	56 4	43 1	38 0	43 5	41 9
March ..	59 9	41 5	55 6	43 0	39 7	45 7	42 7
April	61 6	42 7	54 10	44 11	41 0	48 1	44 6
May	64 8	44 6	56 0	45 1	41 0	45 2	44 5
June	65 4	47 5	58 7	47 5	41 9	45 1	44 6
July	65 0	50 10	59 6	48 3	44 6	43 9	46 5
August ..	67 8	53 10	60 6	46 0	49 1	43 11	48 6
September ..	62 8	47 3	64 2	46 8	47 6	41 2	52 3
October ..	66 6	47 0	60 10	46 6	48 10	41 9	47 1
November ..	69 5	50 1	60 9	47 11	48 9	43 9	45 11
December ..	67 4	52 4	61 8	49 9	46 7	44 1	44 7
The Year ..	64 5	46 10	58 8	46 2	43 11	44 4	45 4
	BARLEY.						
January ..	44 3	35 11	40 1	34 5	37 6	37 0	32 0
February ..	44 4	34 5	40 4	33 5	35 8	36 2	32 5
March ..	41 0	34 0	39 10	32 8	33 10	34 7	31 10
April	39 6	34 7	39 1	33 10	31 8	33 9	31 11
May	38 10	33 3	38 4	34 1	29 8	32 4	31 5
June	36 2	32 8	37 2	32 11	27 2	29 10	30 5
July	35 2	31 7	36 6	32 9	26 4	28 6	27 9
August ..	37 3	33 8	37 7	32 2	29 5	29 7	29 5
September ..	39 11	36 1	43 11	37 8	38 8	34 4	34 5
October ..	41 3	36 7	43 9	39 4	40 9	34 10	35 1
November ..	42 2	36 7	44 0	39 3	40 1	34 3	34 5
December ..	40 11	35 4	44 9	38 9	38 4	32 1	32 1
The Year ..	40 0	34 7	40 5	35 2	34 0	33 1	31 11
	OATS.						
January ..	24 0	20 8	22 2	24 2	20 0	21 3	20 1
February ..	24 3	20 2	21 11	24 5	19 9	21 8	20 6
March ..	24 7	20 11	23 3	25 1	20 6	22 8	21 7
April	24 9	21 2	23 10	25 8	20 10	23 10	22 1
May	26 0	23 0	25 4	26 7	21 11	24 9	22 10
June	27 5	23 9	26 7	28 1	22 4	26 3	23 4
July	28 0	26 1	28 9	29 10	22 11	27 1	23 7
August ..	28 8	26 9	28 7	29 0	23 9	25 5	24 0
September ..	26 11	23 5	27 7	26 7	24 9	21 4	23 1
October ..	25 8	22 3	25 3	25 3	22 6	21 1	20 0
November ..	25 11	23 5	25 4	25 7	21 5	20 11	20 4
December ..	25 2	23 4	26 1	25 1	21 1	20 8	20 3
The Year ..	26 0	22 11	25 5	26 3	21 10	23 1	21 9

HOME CONSUMPTION. — The following summary of the duty-paying articles retained for home consumption in the year ended December 31, 1881, is taken from the Report of the Commissioners of Customs:—The consumption of *cocoa* has increased by 331,000 lbs. or 3·1 per cent. The total quantity entered for home consumption was 10,897,000 lbs. *Coffee and chicory* taken together were entered for home consumption in 1880 and 1881 to the amount of 404,000 cwts. and 399,000 cwts., respectively, showing a small decrease of 5,000 cwts., or 1·2 per cent. The falling off is nearly altogether in coffee, which has declined from 290,000 cwts. to 285,000 cwts., or 2 per cent. *Dried Fruits* collectively show an increase of 155,000 cwts. Currants and raisins, which last year showed a decrease of 97,000 cwts., have this year increased to the extent of 143,000 cwts., or 11·8 per cent. over the figures of 1880. *Spirits* again show a decrease from the consumption of the preceding year, the figures being 8,345,000 gallons in 1881, against 8,529,000 gallons in 1880. This decrease of 2·1 per cent. is principally in brandy and rum. The consumption of plain spirit, the remarkable diminution of which since 1876 was noticed in last year's "Companion," has been almost stationary, the figures for 1880 and 1881 being 380,000 gallons and 377,000 gallons respectively. Geneva shows an increase of 5,000 gallons, or 2·4 per cent. The total consumption of *Wine* has slightly decreased (1·2 per cent.) from that of last year. The decrease is principally noticeable in the white wines from France and Spain, the figures being 5,730,000 gallons in 1880, against 5,144,000 gallons in 1881. On the other hand the consumption of light red wines from France shows an increase of 368,000 gallons, or over 88 per cent. of the total increase in that class of wine. The consumption of *Tea* has increased from 158,570,000 lbs. in 1880 to 160,225,000 lbs. in 1881, or 1·0 per cent., but is still below that of 1879 to a small extent. The quantity of manufactured *Tobacco* retained for consumption in 1881 shows a slight increase of 120,000 lbs. or 0·2 per cent. over that of 1880; the figures being for 1880, 47,870,000 lbs., and for 1881, 47,990,000 lbs. Manufactured tobacco has increased from 1,304,000 lbs. to 1,332,000 lbs., or 2·1 per cent. This increase is almost all in the other sorts of manufactured tobacco, the quantity of Cigars being practically unaltered. The net revenue derived from tobacco in the year ending 31st December, 1881, was 8,738,692*l*., against 8,712,649*l*. in 1880. The amount of drawback paid was in 1881, 85,888*l*., and in 1880, 68,149*l*.

MACHINERY AND MILL WORK.—This important article of export increased in value from 9,263,516*l*., in 1880, to 9,960,210*l*. in 1881, in spite of the fact that the shipments of steam engines to Russia fell from 286,623*l*. to 193,824*l*. and of other descriptions of machinery from 1,670,049*l*. to 907,664*l*. Much larger quantities of the former description were sent to Germany, Spain, Egypt, the United States, Brazil, British India, and Australia, and of the latter to Belgium, France, Brazil, British India, and Australia.

BOOK AND PAPER EXPORTS.—The annual report of Her Majesty's Commissioners of Customs, bearing date June, 1882, shows a decided increase in the value of our exports of books, paper, stationery, and prints during the year 1881 as compared with the preceding twelve months. In 1880 the value stood at 3,036,412*l*., whereas last year it rose to 3,450,374*l*., giving an increase of 13·6. Taking the printed books separately from the other articles included in the above class of the Commissioners' returns, we find that the value in 1881 was 1,099,846*l*., as compared with 970,263*l*., giving an increase of 13·4 in the past year. The weight of the books exported also shows a considerable increase: in 1880 it stood at 97,208 cwt., but last year had grown to 109,990 cwt., equal to an increase of 13·1.

THE AGRICULTURAL RETURNS.—From the Agricultural Returns of Great Britain for 1882 it appears that figures have been obtained from 552,000 occupiers of land and from 4,953 owners of live stock only, showing an increase (the whole of which is in England and Wales) of about 1,600 occupiers of land and 92 owners of stock. The total quantity of land returned in 1882 as under all kinds of crops, bare fallow, and grass, amounts to 32,313,000 acres, as compared with 32,211,000 acres in 1881. The whole of this increase is in England and Wales, Scotland showing a smaller cultivated area than last year, there being several instances of decrease caused by the conversion of sheep runs into deer forests in the counties of Caithness, Ross, and Sutherland. Taking the figures for the whole of the United Kingdom, including the Isle of Man and Channel Islands, the variation from the returns of last year are not very important as regards the total cultivated area. Corn and green crops and rotation grasses have a less acreage; but permanent pasture shows an important increase, mainly due to the English and Welsh returns. Pigs are much more numerous in each division of the United Kingdom, their increase about counterbalancing the falling off in cattle and sheep.

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4. POPULATION, PUBLIC EMPLOYMENT, AND VITAL STATISTICS.

Population of the United Kingdom in 1881 and 1882.—The estimated population of the United Kingdom in the middle of 1881 and 1882, exclusive of the Army, Navy, and Merchant Seamen abroad was as follows:—

	1881.	1882.
England and Wales ..	26,055,406	26,406,820
Scotland ..	3,744,323	3,784,100
Ireland ..	5,129,950	5,088,079
Totals ..	34,929,679	35,278,999

Estimated growth of population .. 349,320

Births, Marriages, and Deaths.—The following table shows the total number of births, deaths, and marriages from 1867 to 1881:—

England and Wales.

Years.	Births.	Deaths.	Marriages.
1867	768,349	471,073	179,154
1868	786,808	480,622	176,962
1869	773,381	494,828	176,970
1870	792,787	515,329	181,655
1871	797,428	514,879	190,112
1872	825,907	492,265	201,267
1873	829,778	492,520	205,615
1874	854,956	526,632	201,010
1875	850,607	546,453	201,212
1876	887,968	510,315	201,874
1877	888,200	500,496	194,352
1878	891,906	539,872	190,054
1879	880,389	526,255	182,082
1880	880,520	528,056	191,634
1881	883,518	491,813	197,980

Scotland.

1867	114,115	69,024	22,521
1868	115,673	69,386	21,853
1869	113,395	75,789	22,083
1870	115,423	74,067	23,788
1871	116,127	74,644	23,966
1872	118,873	75,741	25,580
1873	119,738	76,857	26,730
1874	123,795	80,676	26,247
1875	123,693	81,785	25,921
1876	126,749	74,122	26,503
1877	126,824	73,946	25,790
1878	126,707	76,775	24,333
1879	125,736	73,329	23,462
1880	124,652	75,795	24,489
1881	126,214	72,301	25,948

Ireland.*

Years.	Births.	Deaths.	Marriages.
1867	144,318	93,911	29,796
1868	146,108	86,803	27,753
1869	145,659	89,573	27,277
1870	150,151	90,695	28,835
1871	151,665	88,720	28,960
1872	149,292	97,577	27,114
1873	144,377	97,537	26,270
1874	141,288	91,961	24,481
1875	138,320	98,114	24,037
1876	140,469	92,324	26,388
1877	139,659	93,543	24,722
1878	134,117	99,629	25,284
1879	135,328	105,089	23,254
1880	128,010	102,955	20,390
1881	125,840	90,085	21,762

* Owing to the defective state of the Registration, the figures for births, deaths, and marriages in Ireland are only an approximation to the real numbers.

Police Force of the United Kingdom.—The strength of the Police Force in 1881 in England and Wales was 32,032; in Scotland, 3,518; in Ireland, 13,383. The numbers in 1871 were: in England and Wales, 27,425; in Scotland, 3,003; in Ireland, 14,028.

Metropolitan Police Force.—The strength of this force on December 31, 1881, was 25 superintendents, 605 inspectors, 947 sergeants, and 9,657 constables, making a total of 11,234 of all ranks. This includes all men employed in the royal dockyards and arsenals, and also those specially employed and paid for by public departments and private firms, which amount to 4 superintendents, 55 inspectors, 161 sergeants, 1,074 constables, leaving 21 superintendents, 550 inspectors, 786 sergeants, 8,583 constables available for duty in the metropolis; 722 men were removed from the force during the year.

Children of School Age.—Accepting the population of England and Wales at the middle of the year 1881 at 26,055,406, the report of the Education Department estimates that the number of children of the school age—*i.e.*, 3 to 13, as defined by the Education Act—was 6,146,104, and deducting from this number one-seventh as representing the children of a class above that commonly found in elementary schools, the number for whom elementary education remained to be provided was 5,268,089. Accommodation was actually available for 4,389,633 of these children.

THE ARMY AND RESERVE FORCES.—The following table shows the average strength of the Regular Army at home and abroad, and the effective strength of the Reserve Forces in 1881 :—

REGULAR ARMY.

	At home.	Abroad.	Total.
Officers	3,954	3,658	7,612
Non-commissioned officers and men	87,992	93,194	181,186
Total	91,946	96,852	188,798

RESERVE FORCES.

Army Reserve*		41,796
Militia and Militia Reserve†		99,002
Yeomanry†		10,617
Volunteers§ { Efficient 200,162 / Non-efficient 8,146 }		208,308
Total troops, all ranks and ratings	548,521	

* On the 1st of January in each year. † At the date of inspection.
‡ Exclusive of the Irish Militia, which was not called out for training.
§ On the 1st of November in each year.

LUNACY IN ENGLAND AND WALES.—The 36th report of the Commissioners in Lunacy, states that the total number of lunatics, idiots, and persons of unsound mind in England and Wales, who were registered on the 1st of January, 1882, was 74,842, being an increase upon the number recorded at the same date in the previous year of 1,729. These figures, as usual, do not include the lunatics (230 in number) so found by inquisition, and residing in private houses under the personal supervision of their committees. They are also exclusive of 140 male prisoners who have become insane whilst undergoing sentences of penal servitude, and who are kept under treatment in the wards of convict prisons. The total number of 74,842 on the 1st of January last consisted of 4,090 males and 3,663 females of the private class, and 29,657 males and 37,432 females who were paupers; an increase, as compared with the 1st of January, 1881, of 12 private patients (3 males and 9 females), and of 1,717 paupers (771 males and 946 females). During 1881 the number of the private patients remained almost stationary, and the increase was almost entirely among the paupers. The county and borough asylums in England and Wales are still 61, no addition to their number having been made in 1881. The total number of lunatics in these establishments on the 1st January, 1882, was 42,691, or 266 males and 318 females of the private, and 19,026 males and 23,081 females of the pauper class. The recoveries of the year compared with the admissions (deducting transfers, but not excluding re-admissions) were 35·24 per cent. for the males, and 44·85 for the females, or 40·13 per cent. for both sexes. The mortality for the year, calculated on the average daily number resident, was 12·16 per cent. for the males, and 7·57 for the females, or 9·64 for both sexes. During the year 1881 the average weekly cost per head for maintenance, medicine, clothing, and care of patients in county and borough asylums was as follows:—In county asylums, 9*s.* 4½*d.*; in borough asylums, 10*s.* 8¾*d.*; in both taken together, 9*s.* 6¾*d.* As compared with the year 1880, this cost shows a decrease in county asylums of 2½*d.*, in borough asylums of 7¾*d.*, and in the aggregate of 2½*d.* The rise in the cost of the year 1880 over its predecessor was followed by a reduction in 1881, which brought the average weekly cost down lower than in any year since 1868.

GROWTH OF LONDON.—The area of Greater London, including all parishes within 15 miles of Charing Cross, is 688 square miles. The population is now estimated at 4,788,657, having increased to its present numbers from 3,808,360 in 1871. The rateable value of the area for 1880–81 was 26,862,819*l.*, while in 1869–70 it was only 19,809,002*l.* During the year 1881 there were 26,170 new houses built, forming 556 new streets and four new squares, covering a length of 86 miles and 384 yards. The total number of new houses built since 1871 is 162,525, extending over 500 miles of streets and squares; 7551 houses were in course of erection at the close of the year. The number of houses built and building during the year 1881 exceeds that of any previous year.

5. CRIME, PAUPERISM, AND ACCIDENTS.

PRISONS IN ENGLAND AND WALES.—The fifth report of the Commissioners of Prisons in England and Wales shows that the number of prisoners received during 1881 in local prisons under sentence of the ordinary courts was 161,438, besides 2,298 soldiers and sailors sentenced by courts-martial. There were also 7,082 persons imprisoned as debtors or on civil process, making a total of 170,818. The corresponding numbers for the year preceding were respectively—convicted by the ordinary courts, 149,074; by courts-martial, 4,619; debtors and civil process, 8,187; total, 161,880. The population of the prisons on the 31st of March, 1882, was 18,392, having been 17,329 at the end of the previous year. The average daily population was 17,798, viz., 14,306 males and 3,492 females in 1881–82; in the previous year it was 18,027, viz., 14,607 males and 3,420 females. The highest number of prisoners shown in any of the monthly returns was 18,613 on the 4th of October, 1881, and the lowest was 16,475 on the 3rd of May, 1881, a difference of 12·97 per cent. above the lowest number. The Commissioners state that although the number of prisoners passing through the prison during the present year has been greater than last year, yet the total number of offences committed has been less, and the number of prisoners punished is almost exactly the same, the number not punished at all being, therefore, much greater than last year. The use of punishment cells has largely decreased, except in three or four prisons, as also has that of dietary punishments, the former being only 34·2 per cent. and the latter 51·3 per cent. of the numbers of four years ago, from which it may be inferred that the stage system introduced in 1878 effectively serves the purpose it was expected to.

REFORMATORY AND INDUSTRIAL SCHOOLS.—The 25th Report of Colonel Inglis, the Inspector of the Reformatory and Industrial Schools, for the year ending December 31, 1881, shows that the total number of children under sentence of detention in Reformatories and Industrial Schools at the close of the year in question, was 23,693—viz., 19,037 boys and 4,656 girls. These are divided by Colonel Inglis into three classes—(1) children who have undergone imprisonment before being admitted to the schools; (2) children who have committed some petty crime, or were likely to lapse into crime, but have never been in prison. Of late years a third class has sprung up, increasing in number every year, consisting of children whose offence consists in non-attendance at school. In 1881, the number of schools under inspection was 203, and the total cost of their maintenance 482,602*l.* 16*s.* 11*d.*, of which sum 263,053*l.* 17*s.* was contributed by the Treasury. With some few exceptions the working of the schools during the past year was satisfactory. The number of reformatory schools in England at present is 50, and in Scotland 12. On the 31st December, there were under detention in these schools 5,518 boys and 1,220 girls. As regarded the effects of reformatories, the reports of the discharges for the years 1878, 1879, and 1880 showed that of the boys discharged 76 per cent. were doing well, 10 per cent. were either doubtful or unknown, and 14 per cent. had been convicted; as to the girls, 72 per cent. were doing well, 22 per cent. were doubtful or unknown, and 6 per cent. had been convicted. Little difference is shown in the average cost of the maintenance of boys and girls, each boy in the English reformatories last year costing 19*l.* 12*s.* 8*d.*, and each girl 19*l.* 4*s.* As regards Industrial Schools, the number certified on the 31st of December was 133; during the year five new schools had been certified, and one had ceased to exist. There were detained in these schools, on the issuing of the Report, 16,955 children, by far the larger number (13,519) being boys. Day Industrial Schools Colonel Inglis reports as working successfully, and he hopes to see the system greatly enlarged and extended and recognised by every School Board as forming part of its machinery. If that were the case, there would soon be a large reduction in the number of committals to Industrial Schools.

CONVICT PRISONS.—The annual Report on the Convict Prisons in England for the year ending March 31, 1882, shows that the number of male convicts received into the convict prisons under fresh sentences during the year was 1,592, besides 136 with licences revoked or re-committed to serve out the period remitted from their former sentences, and one escaped convict recaptured. The number of female convicts received in the convict prisons under fresh sentences during the same year was 183, besides 48 with licences revoked or re-committed to serve out the period remitted from their former sentences. The number of sentences of penal servitude passed in England and Wales in 1881—viz., 1,525—differs only by two from the number in the year preceding—viz., 1,523 — which was lower than in any year on record except three; including Scotland, the number of sentences, 1,684, is also lower than in any previous year except three. The steady decrease in the number of sentences of penal servitude is, therefore, maintained. A table is given showing the number of prisoners under each length of sentence at

the end of each of the past five years. The average length of sentence for the earliest of the five years was—males, 8·33 years; females, 8·06 years. In the last it was—males, 8·25 years; females, 7·6 years. A very noticeable progressive change has occurred in the number of young persons in convict prisons. From the figures, as exhibited in the report in a tabular form, it appears that while the total prison population has almost stood still for the last 11 years, being only 10,160 on December 31, 1871, and 10,221 on March 31, 1882, which is, of course, equivalent to a decrease relatively to the total population of the country, which has increased in that period from 22,712,266 to 26,250,000. The proportion of younger criminals has largely decreased. The number who are between 15 and 24 is now only 1,957, as compared with 2,948 in 1871. The number who are between 25 and 34 is practically the same —viz., 3,885 and 4,067; and the number above that age has increased from 3,144 to 4,378. A similar diminution in the proportion of younger criminals has occurred within the last few years in local prisons. The number of persons in Western Australia chargeable to the Imperial Government continues to decrease, and the last return received shows that on March 81, 1882, there were only 170 inmates of Imperial and Colonial establishments who were chargeable to Imperial funds, and 76 Colonial inmates of Imperial establishments. The number of ticket-of-leave holders earning their own living on December 31, 1881, was 240, being a decrease of 39 on the number (279) on the corresponding day of 1880.

Crime in the Metropolis.—In the area under the charge of the metropolis (all parishes within a radius of 15 miles from Charing Cross) the number of "principal" offences, including murder, all felonies, robberies, and larcenies, during the year was 25,032, against 25,368 in the previous year, being a diminution of 336 offences. Burglaries decreased from 488 in 1880 to 470 in 1881. Housebreaking (larcenies in houses committed during the daytime) increased from 804 in 1880 to 961 in 1881. In 114 of these cases no loss occurred, and in 250 other cases the value stolen did not exceed 1*l*. Of these burglaries and housebreakings, 762, as nearly as possible one-half of the total number of these offences, were committed in houses where there was no person in charge, and in 842 cases the robberies were committed through doors or windows left open or insecure, so that a very large proportion of these offences would have probably been prevented by the exercise of moderate care on the part of the owners of the property stolen. Out of the total number of other larcenies, those committed through doors or windows left open have increased from 2,789 in 1880 to 2,872 in 1881. Of the whole number of doors and windows found open by the police at night there is a decrease from 28,915 in 1880 to 25,591 in 1881, evidencing, it may be hoped, more care on the part of householders. The total loss of property by theft during the year, as appraised by the owners, was 103,568*l*. It is quite impossible to make any estimate of the value of household property in this metropolis; it is, however, so enormous that the annual loss is, comparatively speaking, extremely small. The number of persons arrested for being drunk and disorderly increased from 16,520 in 1880 to 18,721 in 1881.

Persons Lost or Missing.—During 1881, in the Metropolitan Police area, 11,835 children under 10 years of age and 3,416 adults were reported as lost or missing during the year, making a total of 15,251 persons. Of these 7,523 children and 720 adults were found by the police, 60 adults and 1 child committed suicide, and the remainder returned home or were found by their friends, except 23 children and 154 adults, who have not been found. 54 bodies of persons found dead and unknown were photographed, but have not been identified.

Criminal Investigations.—Mr. C. E. Howard Vincent, the Director of Criminal Investigations, reports that although the number of criminal offences reported in 1881 was 218 less than 1880, it is satisfactory to record that the police succeeded in arresting 649 more persons. This improvement is the more noticeable when it is found that the former decrease is especially in serious crime, viz., of 251 in felonies, and the increase in the apprehensions for such offences is no less than 710. During 1881, 6,242 persons, a greater number than in any preceding year, were apprehended by the Department, which had a working strength of 240, and in the same period they inquired into no less than 2,605 cases, in which no arrest was required. In 215 cases judicial authorities and juries commended the action of the police, an acceptable recognition of merit also in excess of former years. 37 persons have been surrendered to foreign States under the Extradition Acts—also a greater number than has been ever previously attained.

Pauper Lunatics.—The increase in the number of pauper lunatics in England and Wales during 1881, as compared with 1880, was 1801, whilst the average annual increase of pauper patients for the previous 10 years was 1,507. The total number of pauper lunatics on the 1st of January, 1882, was 29,657 males and 37,432 females. The total number of pauper patients maintained in metropolitan and provincial licensed houses on the 1st of January last was 1,468, being a increase of 262 as

compared with the 1st of January, 1881, and showing that the provision by county and borough authorities of public asylum accommodation fails to keep pace with the requirements. On the 1st of January, 1882, the number of lunatics, idiots, and persons of unsound mind, retained in workhouses and workhouse infirmaries was 16,976, showing an increase of 165 in the number reported for the 1st of January, 1881. Of the total number 12,223 were inmates of ordinary workhouses belonging to unions or parishes, while 4,743 were in the Metropolitan District Asylums at Leavesden, Caterham, and Darenth, which for the purposes of the Lunacy Acts are classed as workhouses. There are now two distinct asylums at Darenth; that for adult imbeciles, and the school for idiot and imbecile children. The workhouses visited by members of the board during 1881 were 286, and the insane and imbecile inmates seen were 13,431, or 5,974 males and 7,457 females.

STREET ACCIDENTS IN LONDON.—In the Metropolitan Police area the number of fatal accidents in the streets which came under the cognisance of the police decreased from 137 in 1880 to 127 in 1881, but the Registrar-General's return, compiled from all sources of information, shows an increase from 220 in 1880 to 252 in 1881. The cases of persons maimed or injured in the streets was 3,400, against 3,339 in 1880.

AGES AND CLASSES OF WRECKED VESSELS.—Excluding foreign ships and collision cases, 146 disasters happened to nearly new ships, 322 to ships from from three to seven years of age, 506 to ships from seven to 14 years old; 932 to ships from 15 to 30 years old; 463 to ships from 30 to 50 years old; 59 to ships from 50 to 60 years old; 34 from 60 to 70 years old, six from 70 to 80, seven from 80 to 90, five from 90 to 100, and six to vessels upwards of 100 years old; while the ages of 83 are unknown. Excluding collisions, 495 steamships and 2,367 sailing vessels were lost or damaged on our coasts last year. Of the 2,569 British ships which met with disaster, 1,341 did not exceed 100 tons burthen, 791 were from 100 to 300 tons, 170 were from 300 to 500 tons, and 267 were above 500 tons burthen. Of the 540 British vessels totally lost irrespective of collisions 44 are known to have been built of iron, and of these 34 were steamships, and 10 sailing vessels.

THE WRECKS OF 1881.—The Wreck Register issued by the Board of Trade shows that the number of wrecks, casualties, and collisions on the coasts of the United Kingdom for the year 1880–81 was 3,575, or 1,056 in excess of those of 1879–80, resulting in the loss of 984 lives. Only 705 cases involved total loss, and there was loss of life from only 238, or about 1 in 18 of the vessels lost or damaged. After deducting 705 from the casualties of the year, we find that the remainder is made up of 1,314 more or less serious and 1,556 minor disasters. The 3,575 wrecks, casualties, and collisions reported as having occurred on and near the coasts of the United Kingdom during the year 1880–81 comprised 4,297 vessels. The number of ships in that period is larger than the total of the previous year by 1,159, and is in excess of the casualties reported, as in cases of collision two or more ships are involved in one casualty. Thus 713 were collisions, and 2,862 were wrecks and casualties other than collisions. On subdividing these latter disasters, we find that 636 were wrecks, &c., resulting in total loss; 670 were casualties resulting in serious damage, and 1,556 were minor accidents. During the year 1879–80 the wrecks and casualties other than collisions on and near our coasts numbered 1,916, or 946 less than the number reported during the twelve months now under discussion. The localities of the wrecks during the year 1880–81, excluding collisions, are thus given:—East coasts of England and Scotland, 1,088; south coasts, 503; west coasts of England and Scotland and coast of Ireland, 987; north coast of Scotland, 82; and other parts, 202. Total, 2,862. The loss of life, including collisions, was as follows:—East coast, 585; south coast, 94; west coast, 162; north coast, 54; other parts of the coast, 89. Total, 984. Out of the 2,862 casualties other than collisions 2,569 occurred to vessels belonging to this country and its dependencies, and 293 to foreign ships. Of these 2,569 British vessels, 1,732 were employed in our own coasting trade, 667 in the foreign and home trade, and 170 as fishing vessels. Excluding collision cases, the number of English ships totally lost on and near the coasts of the United Kingdom from defects in the ships or their equipments during the year is 34; 92 were lost through the errors of masters, officers, crews, or pilots, 319 through stress of weather, and 95 from other or unknown causes.

WRECKS ON THE BRITISH COAST, 1854-81.—The following is a list of the shipwrecks on our coasts from 1854 to 1880–81:—1854 (last six months), 458; 1855, 1,141; 1856, 1,153; 1857, 1,143; 1858, 1,170; 1859, 1,416; 1860, 1,379; 1861, 1,494; 1862, 1,488; 1863, 1664; 1864, 1,390; 1865, 1,656; 1866, 1,860; 1867, 2,090; 1868, 1,747; 1869, 2,114; 1870, 1,502; 1871, 1,575; 1872, 1,958; 1873 (first six months), 967; 1873-4, 1,803; 1874-5, 3,590; 1875-6, 3,757; 1876-7, 4,164; 1877-8, 3,641; 1878-9 3,002; 1879-80, 2,519; and 1880-1, 3,575; making a total number of wrecks in 27 years of 55,416, involving the loss of 19,534 lives. During the same period, the lifeboats of the National Lifeboat Institution have saved 12,667 lives.

6. EDUCATION, SCIENCE, AND ART.

Progress of Education in Great Britain.—The following table exhibits the progress of education in Great Britain in schools under Government inspection from 1864 to 1881, distinguishing England and Wales from Scotland:—

Years ended 31st August.	Number of Schools Inspected.	Number of Children who can be Accommodated.	Average number of Children in Attendance.	Number of Children present at Inspection.
	England and Wales (including Isle of Man and Roman Catholic Schools for Great Britain).			
1864	6,470	1,332,553	862,817	983,928
1869	8,592	1,838,416	1,153,572	1,448,299
1874	13,084	2,952,479	1,710,806	2,093,180
1876	14,875	3,483,789	2,007,732	2,448,299
1877	15,187	3,653,418	2,150,683	2,633,198
1878	16,293	3,942,337	2,405,197	2,944,127
1879	17,166	4,142,224	2,594,995	3,122,672
1880	17,614	4,240,753	2,750,916	3,268,147
1881	18,062	4,389,633	2,863,535	3,372,990
	Scotland (exclusive of Roman Catholic Schools, included above).			
1864	1,421	188,904	148,317	149,363
1869	1,745	237,928	179,214	191,203
1874	2,587	391,592	274,588	314,576
1876	2,912	462,986	332,545	382,224
1877	2,931	535,949	360,413	417,699
1878	2,998	563,481	377,257	439,021
1879	3,003	585,629	385,109	447,801
1880	3,056	602,054	404,618	470,581
1881	3,074	612,483	409,966	475,021
	Total for Great Britain.			
1864	7,891	1,521,457	1,011,134	1,133,291
1869	10,337	2,076,344	1,332,786	1,639,502
1874	15,671	3,344,071	1,985,394	2,407,756
1876	17,787	3,946,775	2,340,227	2,830,523
1877	18,118	4,189,367	2,511,096	3,050,897
1878	19,291	4,505,818	2,782,454	3,383,148
1879	20,169	4,727,853	2,980,104	3,570,473
1880	20,670	4,842,807	3,155,534	3,738,728
1881	21,136	5,002,116	3,273,501	3,848,011

Elementary Education in England and Wales.—The Committee of Council on Education (England and Wales) report that in the year ending 31st August, 1881, the inspectors visited 18,062 day schools containing 26,376 departments under separate teachers, and furnishing accommodation for 4,389,633 scholars; there were 4,045,362 children on the registers, of whom 3,372,990 were present on the visit of the inspector. The annual Government grant to elementary day schools rose in the year from 2,130,009*l.* to 2,247,507*l.* There were 33,562 certificated teachers at work in the aided schools, while the 41 training colleges from whence the teachers came were attended in 1881 by 3,116 students. The Council found that the schools in England and Wales, visited by the inspectors for the purpose of annual grants, which provided in 1869 for 1,765,944 scholars, or for 8·34 per cent. of the population, were in 1881 sufficient for 4,389,633 scholars, or 16·85 per cent. of the estimated population. An additional provision of room for 1,429,421 in voluntary schools and 1,194,268 in Board schools has thus been made since the passing of the Education Act of 1870. The average attendance in aided day schools has risen from 1,152,389 in 1870 to 2,863,535 in 1881—*i.e.*, from 5·5 to 10·99 per cent. of the population.

ELEMENTARY SCHOOLS IN ENGLAND AND WALES.—The following table shows the rate of progress since the passing of the Education Act of 1870:—

	Years ending 31st August.			
	1870.	1874.	1876.	1881.
I.—Estimated population ..	22,090,163	23,648,609	24,244,010	26,055,406
II.—Number of schools, day and night (Institutions), inspected	8,281	13,163	14,368	18,189
III.—				
Number of departments—				
1. Day	12,061	17,646	20,782	26,376
2. Night	2,504	1,432	1,474	1,222
Accommodation				
1. Day schools	1,878,584	2,861,319	3,426,318	4,389,633
2. Night schools (not connected with day schools)	..	10,507	14,810	12,697
IV.—Present at examination—				
1. Day scholars	1,434,766	2,034,007	2,412,211	3,372,990
2. Night scholars ..	77,918	36,720	41,133	32,912
Average attendance—				
1. Day scholars	1,152,389	1,678,759	1,984,573	2,863,535
2. Night scholars ..	73,375	48,690	49,858	39,222
V.—Number of teachers—				
Certificated	12,467	18,714	23,053	33,562
Assistant	1,262	2,489	3,173	8,559
Pupil	14,304	27,031	32,231	33,639
Studying in training colleges	2,097	2,982	3,007	3,116
II.—VOLUNTARY SCHOOLS.				
Number of schools	8,281	11,341	12,677	14,370
Number of departments	12,061	16,357	18,057	20,085
Accommodation	1,878,584	2,626,318	2,870,168	3,195,365
Average attendance	1,152,389	1,540,466	1,656,502	2,007,184
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Annual income per scholar from .. 1. School pence	0 8 4¼	0 10 5¾	0 10 6¾	0 11 0¼
Annual income per scholar from .. 2. Voluntary contributions	0 6 11¾	0 7 9	0 8 8½	0 7 1
Cost .. .. per scholar in average attendance	1 5 5	1 10 10½	1 13 5¼	1 14 11½
Grant earned per scholar in average attendance	0 9 9¼	0 12 5	0 13 3¼	0 15 7¾
III.—BOARD SCHOOLS.				
Number of schools		826	1,596	3,692
Number of departments		1,289	2,725	6,291
Accommodation		245,508	556,150	1,194,268
Average attendance		138,293	328,071	856,351
		£ s. d.	£ s. d.	£ s. d.
Annual income per scholar from .. 1. School pence		0 8 4	0 9 1½	0 9 3¼
Annual income per scholar from .. 2. Rates		1 0 8½	1 2 2½	0 16 11½
Cost .. .. per scholar in average attendance		1 15 4½	2 1 4½	2 1 6
Grant earned per scholar in average attendance		0 10 10½	0 13 0¾	0 15 9¾

ANNUAL PARLIAMENTARY GRANTS FOR EDUCATION IN ENGLAND FROM 1833 TO 1882.

1833—1838	£20,000	1864 . .	£705,404
1839—1841	30,000	1865 . .	693,078
1842—1844	40,000	1866 . .	694,530
1845 . .	75,000	1867 . .	705,865
1846—1850	115,000	1868 . .	781,324
1851 . .	150,000	1869 . .	840,711
1852 . .	160,000	1870 . .	914,721
1853 . .	260,000	1871 . .	1,458,402
1854 . .	263,000	1872 . .	1,551,560
1855 . .	396,921	1873 . .	1,299,803
1856 . .	451,213	1874 . .	1,356,852
1857 . .	541,233	1875 . .	1,548,563
1858 . .	663,435	1876 . .	1,707,055
1859 . .	836,920	1877 . .	1,910,000
1860 . .	798,167	1878 . .	2,149,208
1861 . .	803,794	1879 . .	2,481,168
1862 . .	842,119	1880 . .	2,536,967
1863 . .	804,002	1881 . .	2,683,958
1882 . . .	£2,749,863		

SCIENCE AND ART DEPARTMENT.—The 29th report of the Science and Art Department of the Committee of Council on Education states that the number of persons who, during the year 1881, attended the school and classes of science and art in connection with the Department was as follows, viz.:—61,177 attending science schools and classes in 1881, as against 60,871 in 1880, and 917,101 receiving instruction in art, showing an increase upon the previous year of 79,793. At the Normal School of Science and Royal School of Mines there were 46 regular and 139 occasional students. At the Royal College of Science for Ireland there were 16 associate or regular students, and 20 occasional students. The lectures delivered in the Lecture Theatre of the South Kensington Museum were attended by 3,788 persons. The evening lectures to working men at the Royal School of Mines were attended by 1,472 persons, being 328 less than last year; and 211 science teachers attended the special courses of lectures provided for their instruction in the new science schools at South Kensington. The various courses of lectures delivered in connection with the Department in Dublin were attended by about 850 persons. The total number of persons therefore who received direct instruction as students or by means of lectures in connection with the Science and Art Department in 1881 was 984,820, showing an increase as compared with the number in the previous year of 78,649, or 8·7 per cent. The attendance at the Art and Educational Libraries at South Kensington and the National Library of Ireland in 1881 was 84,949, showing an increase of 760 over that of last year. The museums and collections under the superintendence of the department in London, Dublin, and Edinburgh were last year visited by 2,464,538 persons, showing an increase of 132,095 on the number in 1880. The number of visitors to the South Kensington Museum has increased from 981,963 in 1880 to 1,017,024 in 1881. The returns received of the number of visitors at the local art and industrial exhibitions, to which objects were contributed from the South Kensington Museum, show an attendance of 1,361,900 persons, as against 696,541 in 1880, or an increase of more than 95 per cent. The total number of persons who during the year 1881 attended the different institutions and exhibitions in connection with the Department was 4,811,258. This total, compared with that of the previous year, presents an increase of 876,103.

7. EMIGRATION.

EMIGRATION.—The following table shows the number of emigrants, of British origin only, from the United Kingdom to countries out of Europe; and number of immigrants into the United Kingdom from such countries in 1866, 1871, 1876, and 1881:—

Years.	Emigrants to					Immigrants.
	British North American Colonies.	United States.	Australia and New Zealand.	Other Places.	Total.	
1866 ..	9,988	131,840	23,682	4,543	170,053	unknown.
1871 ..	24,954	150,788	11,695	5,314	192,751	53,827
1876 ..	9,335	54,554	32,196	13,384	109,469	93,557
1881 ..	23,912	176,104	22,682	20,304	243,002	77,105

8. THE POST OFFICE.

Revenue and Expenditure.—The gross revenue for 1882 was over 9,028,374*l.*, and its increase on 1880 is shown in the column on the right:—

	£	£	£
Postages on letters, post cards, newspapers, &c.		6,770,232	291,536
Commission on money orders	226,947		
Commission on postal orders	25,657		
Value of unclaimed money orders	4,764		
		257,368	2,637
Savings bank profits		346,373	12,603
Revenue from telegraphs		1,654,401	20,515
		9,028,374	327,291
The expenditure was:—			
For postal service, including money order and postal order business	3,648,721	..	178,508
,, packet service	637,875		
,, savings bank	200,574	..	11,683
,, telegraph service, including expenditure by other departments	1,440,729	..	132,275
		5,927,899	322,466
The net revenue was, therefore		3,100,475	

being, notwithstanding a heavy growth of expenditure, an increase of 32,396*l.* on the previous year.

The Work of 1881.—The estimated number of letters delivered in the United Kingdom during the twelve months was 1,229,354,800, showing an increase of 5·5 per cent.; the number of post cards, 135,329,000, an increase of 10·1 per cent.; the number of book packets and circulars, 271,038,700, an increase of 12·8 per cent.; and the number of newspapers, 140,789,100, an increase of 5·2 per cent. The number of registered letters was 10,902,318, being an increase of 8·6 per cent. The following table shows the total number of letters delivered through the post in the United Kingdom at the undermentioned periods, and the average per head to the population:—

Year.	Population of United Kingdom.	No. of letters per individual.
1839 .. .. .. (Before the introduction of penny postage.)	26,200,106	3
1840 .. .. .. (After such introduction.)	26,487,026	7
1872	31,555,164	28
1882	34,929,679	35

Post Offices.—The number was increased in 1881 by 434, making a total of 14,918 in the United Kingdom, of which 915 are head offices; 693 letter boxes have been added, making the total number of receptacles of all sorts for letters about 28,860. New post office buildings have been provided and brought into use at Bournemouth, Bury St. Edmunds, Buxton, Dorchester, Huntingdon, Ipswich, Jarrow, Luton, Merthyr Tydvil, Twickenham, and Weymouth. New offices are in progress at many other large towns.

Our Foreign Correspondents.—The total estimated number of letters, post cards, book packets, newspapers, &c,, received in the United Kingdom from abroad during 1881–82 is roughly calculated at 69 millions; while the number despatched from these shores is reckoned at about 87 millions. Europe sends us some 37 millions, America 22 millions, India 3 millions, China half a million, Australia and New Zealand, 3¾ millions, and Africa 2½ millions. On the other hand, the United Kingdom despatches about 44 millions to Europe, 22 millions to America, 7½ millions to India, 1¼ millions to China, 6 millions to Australia, and about 6 millions to Africa. The great disparity in the amount of postal matter sent to India, Australia, and China, compared with the amount received, is attributed by the Postmaster-General to the large number of newspapers and book packets which are sent to those countries.

POST CARDS.—The following table shows the estimated number of post cards delivered in England and Wales and the United Kingdom in each year from 1872 to the present time, and the increase per cent. per annum:—

Year.	England and Wales.	United Kingdom.	
	Number.	Number.	Increase per cent. per annum.
1872	64,000,000	76,000,000	—
1873	60,000,000	72,000,000	—
1874	66,000,000	79,000,000	9·7
1875	73,369,100	87,116,300	10·7
1876	78,412,100	92,935,700	6·7
1877–8	86,051,500	102,237,300	10·
1878–9	94,471,500	111,445,700	9·
1879–80	96,637,400	114,458,400	2·7
1880–81	103,473,100	122,884,000	7·4
1881–82	114,251,500	135,329,000	10·1

NEWSPAPERS.—The following table shows the estimated number of newspapers delivered in England and Wales and the United Kingdom in each year from 1872 to the present time, and the increase per cent. per annum:—

Year.	England and Wales.	United Kingdom.	
	Number.	Number.	Increase per cent. per annum.
1872	87,000,000	109,000,000	—
1873	89,115,200	113,016,500	3·6
1874	91,230,400	117,032,900	3·5
1875	93,345,600	121,049,400	3·4
1876	95,460,800	125,065,900	3·3
1877–8	98,232,400	128,558,000	2·7
1878–9	100,424,300	130,895,300	1·8
1879–80	100,317,000	130,518,400	—
1880–81	102,764,600	133,796,100	2·5
1881–82	108,651,700	140,789,100	5·2

CHRISTMAS LETTERS AND VALENTINES.—Nearly 12½ millions of letters and packets were dealt with at the Central Office during Christmas week, including 4½ tons of registered letters as against 11½ millions and 4 tons in the previous year. The number of valentines despatched from the Central Office was 1,634,000 as compared with 534,000 in 1880. In Dublin, on the other hand, the sending of valentines was almost entirely discontinued.

POST OFFICE SAVINGS BANK AND INVESTMENTS.—The total amount due to depositors, including interest, at the close of the year 1881 was 36,194,495*l*., as compared with 33,744,637*l*. in 1880, exclusive of 738,968*l*. Government Stock held by 11,812 persons, showing an increase of 2,449,858*l*., or 7½ per cent., as against an increase of 5½ in 1880. On 31st March this had risen to 37,219,000*l*. Government stock to the amount of 694,957*l*. was purchased during the year, while the amount sold was 75,868*l*., and 102 stock certificates with coupons payable to bearer were obtained. The total amount of stock standing to the credit of depositors on 31st March was 875,086*l*. The deposits (exclusive of those for immediate investment in stock) were 5,676,066 in number and 11,345,957*l*. in amount, as compared with 3,754,064, amounting to 10,219,631*l*. in 1880, and the withdrawals (not including those relating to stock) were 1,712,866 in number and 9,469,668*l*. in amount, as compared with 1,465,300, amounting to 9,216,564*l*., in 1880. A sum of not less 826,990*l*. was credited to depositors for interest, being 49,005*l*. more than in the previous year; and the grand total allowed under this head during the twenty years since the establishment of the Post Office Savings Bank is 8,285,644*l*. The increase in the number and amount of deposits and the increase in the total amount standing to the credit of depositors at the close of the year compared with 1880, were larger than any previous annual increase. An increase of 280 was made in the number of Savings Bank and Money Order Offices as compared with 217 in the year 1880, and 132 have been added since the beginning of the present year, making the total number on the 31st March, 6,645. The largest number of deposits made in one day, 31st December, 1881 (including deposits for investment in Government Stock) was 41,297, amounting to 96,602*l*.; but the largest amount received in one day, 1st January, 1881, was 106,910*l*., the number of deposits being 36,471. The largest number of withdrawals in one day was 16,288, and the amount 57,689*l*. The daily average number of deposits was 18,523, and the amount 38,349*l*., while the number of withdrawals averaged 5,613, and the amount 31,393*l*. The average amount of each deposit (exclusive of those made for investment) was 2*l*., as against 2*l*. 14*s*. 5*d*. in 1880. This is the lowest average that has been reached and the fact is due, no doubt, to the great increase in the number of small deposits made by means of the Penny Stamp Savings Scheme. The average amount of each withdrawal was also very low, being 5*l*. 10*s*. 7*d*., as compared with 6*l*. 5*s*. 9*d*. in 1880. The average has not been so low since 1863. A daily average sum of 248*l*. was received during the year through the medium of the Penny Stamp Savings

Scheme. The total sum thus collected was 77,696*l.*, and the number of slips 1,553,920. There were 880,831 accounts opened during the year and 458,191 closed, as against 554,658 opened and 358,163 closed in 1880. The number of accounts remaining open at the close of the year was 2,607,612, as against 2,184,972 in the previous year, the increase of 422,640 being more than the aggregate increase of the last three years. The accounts were apportioned as follows:—

	Number.	Proportion to population.	Average balance due to each depositor.
			£ s. d.
England and Wales	2,410,949	Or 1 to 11	14 0 2
Scotland	99,566	Or 1 to 38	7 0 7
Ireland	97,097	Or 1 to 53	17 15 0

TELEGRAPH DEPARTMENT.—The number of telegraph messages sent in 1881 was 31,345,861, being an increase of 1,933,879 over 1880. Deducting about 6,000,000 for Government and Press messages, it appears that the average is about three messages a-year for each four persons. The proportion of telegrams to letters is as 1 to 44.

TELEPHONIC COMMUNICATION.—The Postmaster-General reports his opinion as to the undesirability of creating a monopoly in the matter of telephonic communication, and in future applications will be favourably entertained by him from responsible persons for licences to establish exchanges under conditions which may be regarded as giving adequate protection to the public and to the Department.

RETURNED LETTERS.—The number of letters received in the returned letter offices in 1881 was 5,454,885, an increase of 72,193; of post cards, 559,409, an increase of 35,724; of book packets, 4,701,394, an increase of 504,905; and of newspapers, 414,794, an increase of 19,430; the total number being 11,130,482. Of the letters, 542,816 were unreturnable, 26,750 bore no address, and of this number 1,507 contained cash, cheques, &c., to the amount of over 6,000*l.* Although the number of letters delivered increased 5·5 per cent., as already stated, and the post cards 10·1 per cent., the increase in returned letters was only 1·3 per cent., and in post cards 6·8 per cent. The number of returned book packets increased 12·3 per cent. and the newspapers 4·9 per cent., which corresponds closely with the increase per cent. in the numbers delivered.

STAFF EMPLOYED.—The increase in the number of established officers in 1881 was 2,098, making the total number of persons employed by the Department on the 31st of December 53,772, in addition to about 20,000 persons who do not hold permanent situations. The number of women employed was:—As clerks (in the central establishments in London, Edinburgh, and Dublin), 321; as telegraphists, counter-women, &c., 1,978. The employment of women, the Postmaster-General states, has been attended with so much advantage to the Department and to the public, that it is his intention gradually to extend this branch of the service. The total number of women holding Civil Service certificates was about 2,299, as compared with 2,000 in 1880-81. The non-effective list of the whole staff showed a total of 3,304 pensioners, costing about 175,000*l.*

9. MISCELLANEOUS.

PATENTS FOR INVENTIONS FOR 1881.—The annual report of the Commissioners of Patents for the year 1881 states that the number of applications for letters patent for the year was 5,751, being 234 more than for the preceding year. The number of letters patent sealed was 3,948, of which 68 lapsed in consequence of the patentees having neglected to file final specifications in pursuance thereof, leaving 3,880 in force. Of this latter number final specifications were filed in respect of 3,621, complete specifications being filed in respect of 259. Applicants failed to seal their patents in 1,798 cases, opposition was offered in four cases, and one application stands over through the decease of the applicant. A table is given showing that about 65 per cent. of the applications for patents from 1852 to 1881 became valid patents, that of the valid patents obtained upon the applications from 1852 to 1874 nearly 30 per cent. paid the third year's stamp duty of 50*l.* and continued in force until the end of the seventh year, and that about 10½ per cent. paid the seventh year's stamp duty of 100*l.*, and consequently remained in force for the full term of 14 years.

THE BOOK-ISSUES OF 1880 and 1881.—The following table from the "Publishers' Circular," gives under 14 classes, the number of new books and new editions issued in 1880 and 1881:—

Divisions.	1880.		1881.	
	New books.	New editions.	New books.	New editions.
Theology, Sermons, Biblical, &c.	708	267	744	201
Educational, Classical, and Philological ..	507	168	539	143
Juvenile Works and Tales	564	155	392	108
Novels, Tales, and other Fiction	380	200	446	228
Law, Jurisprudence, &c.	87	58	69	64
Political and Social Economy, Trade and Commerce	204	22	136	26
Arts, Sciences, and Illustrated Works ..	362	117	344	108
Voyages, Travels, Geographical Research	211	74	200	91
History, Biography, &c.	286	77	356	81
Poetry and the Drama	132	55	111	37
Year Books and Serials in volumes ..	353	—	335	4
Medicine, Surgery, &c.	148	54	108	56
Belles Lettres, Essays, Monographs, &c...	80	86	149	98
Miscellaneous, including pamphlets, not Sermons	271	82	181	51
	4,293	1,415	4,110	1,296
		4,293		4,110
		5,708		5,406

Summary { January to December, 1881, inclusive, New Books 4,110
New Editions .. 1,296
5,406

RAILWAY PROGRESS IN ENGLAND AND WALES.—The following table shows the total length, capital, passengers conveyed, receipts, and working expenses of railways in England and Wales from 1867 to 1881:—

Years.	Length of lines open at the end of each year.	Total capital paid up (shares, loans, &c.) at the end of each year.	Total No. of passengers conveyed (excluding season-ticket holders).	Total of traffic receipts.	Total of working expenses.	Net traffic receipts of passengers and goods.
	England and Wales.					
	Miles.	£	No.	£	£	£
1867 ..	10,037	418,277,679	250,598,982	33,398,222	16,764,520	16,633,702
1869 ..	10,773	430,772,858	274,707,152	34,698,985	17,504,308	18.600,814
1870 ..	11,043	440,169,455	295,173,920	36,691,138	18,227,739	19,894,422
1871 ..	10,850	461,368,616	328,552,946	39,842,394	19,387,483	21,995,582
1872 ..	11,136	473,639,591	372,450,223	43,376,178	22,065,151	22,989,668
1873 ..	11,369	490 018,994	401,465,086	47,061,989	25,813,377	23,043,901
1874 ..	11,622	508,726,428	423,083,941	48,142,442	27,534,723	22,675,413
1875 ..	11,789	527,090,667	451,032,641	49,771,919	28,220,495	23,505,921
1876 ..	11,989	544,831,959	477,146,165	50,504,152	28,466,366	24,009,953
1877 ..	12,098	557,878,925	490,351,707	51,063,421	28,635,033	24,422,466
1878 ..	12,229	579,387,630	503,982,893	51,069,770	28,099,438	25,043,437
1879 ..	12,547	593,155,665	503,652,787	50,437,796	27,112,853	25,366,526
1880 ..	12,656	602,242,578	540,669,175	53,598,987	28,577,111	27,218,075
1881 ..	12,810	616,453,000	557,556,000	54,322,000	29,377,000	27,148,000

CHRONICLE OF EVENTS AND OCCURRENCES.

Home and Foreign.

From November, 1881, to October, 1882.

1881.

Nov. 3. M. Brisson elected President of the French Chamber of Deputies in the room of M. Gambetta.

8. Percy Lefroy Mapleton sentenced to death for the murder of Mr. Gold on the Brighton Railway, on the 27th June, 1881.

10. Resignation of M. Ferry and the French Ministry: M. Gambetta entrusted with the formation of the new cabinet.

14. Formation of M. Gambetta's cabinet completed.

16. Robbery of bag of registered letters containing diamonds of great value from the Post Office, Hatton Garden, during the making up of the bags.

29. Execution at Lewes Prison of Percy Lefroy Mapleton, the murderer of Mr. Gold.

Dec. 1. Discovery made that the body of the late Earl of Crawford and Balcarres had been stolen from his tomb at Dunecht House.

8. Burning of the Ring Theatre at Vienna, when filled with spectators.

10. M. Gambetta made his first speech in the French Senate.

11. Centenary of Sir David Brewster celebrated at Edinburgh.

28. Measure of Agrarian Reform issued by Emperor of Russia.

29. Stage of the Savoy Theatre lit by electric light; this being the first occasion of its use for such a purpose.

1882.

Jan. 3. Meeting of Irish landlords, presided over by the Duke of Abercorn, at the Exhibition Palace, Dublin, to consider the working of the Irish Land Act, and to protest against the decisions of the Sub-Commissioners under that Act.

-. Corporation of Dublin by 29 votes to 23 resolved to confer the freedom of the city upon Messrs. Parnell and Dillon.

8. Appointment of Arabi Pasha as Under Secretary of State for War in Egypt.

-. Identic Note from the English and French Governments presented to the Khedive, declaring their intention to uphold his authority in Egypt.

13. Day ordered to be observed by the Bishops of the Church in Ireland as a day of humiliation for the state of the country.

21. Electoral Reform Bill voted by 217 against 63 in the Italian Parliament.

26. Defeat of M. Gambetta in the Chamber of Deputies on the proposal for revision of the Constitution, which was rejected by 298 to 173, and on the proposal to adopt *scrutin de liste*, which was rejected by 305 to 110. Resignation of the Ministry.

—. Close of the trial of Guiteau for the assassination of General Garfield: verdict of "Guilty" returned.

27. M. de Freycinet summoned by the President of the French Republic to form a new Cabinet.

30. Directors of Bank of England raised rate of discount from 5 per cent., at which it had stood since 6th October, 1881, to 6 per cent.

Feb. 1. Meeting at the Mansion House, London, to protest against the cruelties practised towards the Jews in Russia.
2. Sherif Pasha, Prime Minister of Egypt, resigned, and new Ministry formed, with Arabi as Minister of War.
7. Third Session of the 22nd Parliament of Queen Victoria, opened by Commission.
-. The House of Commons, by 286 to 28, refused to allow Mr. Bradlaugh to take the Parliamentary Oath.
16. Narrow escape of the Queen from an accident to her carriage: one of the outriders being thrown from his horse.
—. Colliery explosion at Trimdon Grange, Durham: more than 70 lives lost.
17. House of Lords on motion of Earl of Donoughmore, resolved by 96 to 53 votes, to appoint a Committee to inquire into the working of the Irish Land Act.
22. Sir Stafford Northcote's motion for the expulsion of Mr. Bradlaugh from the House of Commons carried by 291 to 83, and a new writ for Northampton ordered to issue.
23. Bank rate of discount reduced from 6 per cent. (to which it was raised 30th January) to 5 per cent.
27. Meeting of the Liberal Party in the House of Commons: resolution adopted to support Mr. Gladstone's Vote of Censure on the House of Lords.
28. Meeting at St. James's Palace, under the presidency of the Prince of Wales, to promote a scheme for establishing a Royal College of Music.

Mar. 2. Roderick Maclean fired a pistol at the Queen as Her Majesty was driving out of the Windsor Railway Station, but caused no injury.
-. Mr. Bradlaugh elected for the third time M.P. for Northampton.
6. Mr. Bradlaugh presented himself in the House of Commons to be sworn, and Sir S. Northcote moved that the order prohibiting him from taking the oath should be re-affirmed; Mr. Majoribanks, who was supported by Mr. Gladstone, moved as an amendment that the law should be so modified as to permit every elected member to take an oath or affirm at his option; the amendment was rejected by 257 to 242, and Sir S. Northcote's motion carried.
9. Bank rate reduced from 5 per cent., at which it had stood since the 23rd February, to 4 per cent.
23. Colonel Burnaby made a successful balloon voyage from Dover across the Channel.
—. Bank rate reduced to 3 per cent.
—. Lord Redesdale's Bill for enforcing a declaration as a security against the admission of atheists to Parliament withdrawn without a division.
30. Mr. Marriott's amendment to the *clôture* resolutions defeated in the House of Commons by 318 to 279.

April 1. University Boat-race, won by Oxford by ten lengths.
2. Murder of Mrs. H. J. Smyth at Westmeath while driving home from church with her brother-in-law, an Irish landlord.
3. The convict Lamson, under sentence for poisoning his brother-in-law, respited on representation from President Arthur that documents despatched from New York would throw light on the case.
9. Issue of Imperial Ukase at St. Petersburgh announcing the retirement of Prince Gortchakoff from the Ministry of Foreign Affairs.

April 10. Mr. Parnell, M.P., released from Kilmainham Prison on *parôle.*
24. Mr. Gladstone introduced his 12th budget in the House of Commons; the estimated revenue for 1882-83 being 85,325,000*l.*, and the estimated charge 84,250,000*l.*
27. Marriage of Prince Leopold and the Princess Helen of Waldeck at Windsor.
—. Burial of Mr. Darwin in Westminster Abbey.
May 2. Messrs. Parnell, Dillon, and O'Kelly released from Kilmainham Gaol.
—. Mr. Gladstone announced in the House of Commons the retirement of Mr. Forster from the post of Chief Secretary for Ireland.
6. Public entry of Earl Spencer, K.G., into Dublin as Lord Lieutenant, *vice* Earl Cowper.
—. Assassination of Lord Frederick Cavendish, M.P., Chief Secretary for Ireland, and Mr. T. H. Burke, Permanent Under Secretary, in Phœnix Park, Dublin.
—. The Queen visited Epping Forest, and declared it open to the public.
8. Adjournment of both Houses of Parliament as a mark of respect to the memory of Lord F. Cavendish and Mr. Burke.
9. Mr. G. O. Trevelyan, M.P., accepted Chief Secretaryship for Ireland, and Mr. R. G. C. Hamilton (*pro tem.*) the Under Secretaryship.
11. Prevention of Crimes (Ireland) Bill read a first time in the Commons by 327 to 22, the minority being headed by Mr. Parnell.
13. Announcement that the Government had resolved to send two ironclads to Alexandria in consequence of the disturbed state of Egypt.
14. The Italian Senate approved the Treaty of Commerce with France by 90 votes to 15.
18. New Eddystone Lighthouse lighted up for the first time by the Duke of Edinburgh.
19. Resolution in favour of the Sunday opening of national museums and picture galleries rejected in the House of Commons, by 208 to 83.
21. Opening of the St. Gothard railway across the Alps between Lucerne and Milan.
23. Arrears of Rent (Ireland) Bill read a second time in the Commons by 269 to 157.
June 3. "Great Paul," the new bell for St. Paul's Cathedral, dedicated and rung for the first time.
11. Riot at Alexandria; many Europeans killed by the natives.
12. Bill to legalise Marriage with a Deceased Wife's Sister rejected in the House of Lords by 132 to 128.
13. The Khedive, Tewfik Pasha, left Cairo for Alexandria.
17. Thomas Walsh arrested for the illegal possession of arms at Clerkenwell.
18. Hospital Sunday in London; collections, with additions sent in subsequently, 34,424*l.* 12*s.* 2*d.*
20. Formation of new Egyptian Ministry with Arabi Pasha as Minister of War.
29. Conservative meeting at Willis's Rooms to consider the crisis in Egypt; Mr. E. P. Bouverie presiding, and Lord Salisbury and Sir Stafford Northcote being among the speakers.
30. Execution of Guiteau at Philadelphia, U.S.A., for the murder of President Garfield.

July 1. The Prevention of Crimes Bill (Ireland) passed through Committee in the House of Commons, the final discussion occupying 30 consecutive hours.

4. The Duke of Argyll's Bill to substitute Affirmation for the Parliamentary Oath rejected in the House of Lords by 138 to 62.

6. Admiral Seymour sent an ultimatum to the Egyptian Government, stating that if the construction of earthworks at Alexandria were continued the British fleet would bombard the place.

7. Prevention of Crimes Bill (Ireland) read a third time and passed in the House of Commons, and read a first time in the House of Lords: the Government amendment to limit domiciliary visits by the police to the hours of daylight being first rejected by 207 against 194.

11. Bombardment of Alexandria by British ships under command of Sir Beauchamp Seymour.

12. Arabi left Alexandria under cover of a sham flag of truce, and gave over the city to be pillaged and fired by Bedouins and prisoners from the gaols.

18. The Queen's prize at the Wimbledon Rifle Volunteer Meeting won by Sergeant Laurence of the 1st Dumbarton Rifles with 65 points.

25. Dr. Ernest Roland Wilberforce consecrated first Bishop of Newcastle in Durham Cathedral.

29. The French Chamber of Deputies, by 450 votes to 75, rejected the proposal of the Ministry of a vote of 9,500,000 fr. for the protection of the Suez Canal, and M. de Freycinet and his colleagues resigned.

30. Motion for charging the cost of the Indian contingent for Egypt on the revenues of India carried in the House of Commons by 140 to 23.

Aug. 1. Arrears of Rent (Ireland) Bill, as amended, read a third time in the Lords.

3. Cetewayo arrived in England.

–. First case tried at Dublin by special commission under the Prevention of Crimes Act.

–. Sir Allen Young's relief party in the *Hope* steamship rescued Mr. Leigh Smith and the crew of the *Eira* in Matotchkin Straits, Nova Zembla, whither they had returned in their boats, having lost their ships on Franz Josef's Land, on August 21, 1881.

5. The Princes Albert Victor and George of Wales arrived in England in H.M.S. *Bacchante*, having been absent in a voyage round the world since September 13, 1880.

–. Reconnaissance of Arabi's position and first engagement of the British force with his troops, who were completely defeated.

7. New French Ministry formed, with M. Duclerc as President of the Council and Foreign Minister.

9. Thomas Walsh convicted at the Old Bailey, and sentenced to seven years' penal servitude for treason-felony in collecting and sending arms to Ireland to be used against the Queen's Government.

12. Cornish Sunday Closing Bill read a second time in the Commons by 41 to 8.

15. Cetewayo received by the Queen, and informed by Her Majesty of the intention of her Government to allow him to resume his sovereignty.

Aug. 16. Imprisonment of Mr. Gray, M.P., High Sheriff of Dublin, by order of Mr. Justice Lawson, for contempt of court, as shown in articles published and written by him in the *Freeman's Journal*.
17. Adjournment of Parliament to October 24.
—. Bank Rate raised from 3 per cent. to 4 per cent.
18. Murder of the Joyce family, including three women, at Maamtrassna, near Lough Mask.
24. Advance of the British forces against Arabi commenced from Ismailia under Sir Garnet Wolseley; defeat of the rebels at Magfar.
25. Defeat of Arabi's forces at Tel-el-Mahout.
28. Repulse of Arabi's forces at Kassassin by English troops under General Graham.

Sept. 1. Cetewayo left England.
3. Fatal railway accident near Freiburg in Baden, more than 70 persons killed and 150 injured.
8. Proclamation by the Sultan declaring Arabi a rebel issued at Constantinople.
9. Defeat of Arabi's forces at Kassassin by British infantry under Major-General Graham and cavalry under Major-General Drury-Lowe.
13. Capture of Tel-el-Kebir and complete defeat of Arabi's forces by British army under the personal command of Sir Garnet Wolseley; close of the campaign within 25 days from the disembarkation of the English troops at Ismailia.
14. Occupation of Cairo; surrender of Arabi Pasha.
—. Bank Rate raised from 4 per cent. (to which it was advanced on 17th August) to 5 per cent.
24. Thanksgiving Services for success of the British Army in Egypt.
25. The Khedive re-entered Cairo.
29. Election of Mr. Alderman Knight as Lord Mayor of London.
30. Mr. Forster's Protection of Persons and Property Act (Ireland) expired, after having been in operation for eighteen months.
— Release of Mr. Gray, M.P., from prison.

Oct. 3. The Church Congress commenced its 22nd annual meeting at Derby.
8. Michael Davitt speaking at Wexford announced the collapse of the Irish Land League.
10. Opening of Selwyn College, Cambridge.
24. Parliament reassembled.
25. Vote of thanks to the British Forces engaged in Egypt passed in both Houses of Parliament.
28. Sir Garnet Wolseley landed at Dover on his return from Egypt.
—. Mr. J. F. Arthur, M.D., burnt to death in a Pullman car, in the Midland Scotch Express, near Leeds.

Nov. 2. The Earl of Dufferin left Constantinople on a mission to Egypt.
3. Mr. Gibson's amendment to the first of the Procedure Resolutions, in favour of substituting a two-thirds majority for a bare majority as the instrument of applying the Clôture, rejected by 322 to 238, giving the Government a majority of 84.

NECROLOGICAL TABLE.

OF DISTINGUISHED AND NOTABLE PERSONS WHO DIED BETWEEN NOVEMBER, 1881, AND NOVEMBER, 1882.

1881.		Age
Nov.	3. RUFFINI, Giovanni, novelist; at San Remo	74
	4. JOHNSON, George Henry Sacheverell, M.A., Dean of Wells; at Weston-super-Mare	73
	7. MCHALE, John, Roman Catholic Archbishop of Tuam, 1834-81; at Tuam	90
	15. GREG, William Rathbone, late Controller of H.M. Stationery Office, author	72
	20. OWEN, Sir Hugh, promoter of education in Wales; at Mentone	77
	21. BOUE, Ami, geographer and geologist; at Vienna	87
	29. THORNTON, Henry Sykes, banker; at Battersea Rise	81
	30. GAUTIER, Jean Alfred, mathematician and astronomer, founder of the "Bibliothèque Universelle"; at Geneva.	88
Dec.	7. FAUQUIER, Right Rev. F. D., D.C.L., Bishop of Algoma; at Toronto	63
	12. BRADY, Sir Antonio, Registrar of Contracts to the Admiralty, 1854-70; at Stratford	70
	14. BURTON, Decimus, F.R.S., architect of the Athenæum Club, the Zoological Society's Buildings, Hyde Park entrances, &c.; at St. Leonard's	81
	18. STREET, George Edmund, R.A., architect of the new Courts of Justice, &c.; at Cavendish Place	57
	27. LUSH, Right Hon. Robert, Lord Justice of Appeal; at Avenue Road, Regent's Park	74
	29. DRUSKOVITCH, Nathaniel, late inspector of detective police, Scotland Yard; at South Lambeth	47
1882.		
Jan.	3. AINSWORTH, William Harrison, author of historical romances; at Reigate	76
	4. OSBORNE, Bernal, Secretary to the Admiralty, 1852-58, and M.P. successively for Wycombe, Middlesex, Liskeard, Nottingham, and Waterford, 1841-1874; at Bestwood Lodge	70
	—. MACDONALD, Hon. J. W., Lieut.-General, C.B., Private Secretary and Equerry to the Duke of Cambridge; at St. Leonard's-on-Sea	72
	6. DANA, Richard Henry, American author and lecturer on International Law; at Rome	67
	15. MALINS, Right Hon. Sir Richard, Vice-Chancellor, 1866-1881; at Lowndes Square	78
	17. MACNEE, Sir Daniel, President of the Royal Scottish Academy; at Edinburgh	76
	20. LINNELL, John, R.A., artist; at Redhill	89
	27. LESLIE, Professor Thomas Edward Cliffe, political economist; at Belfast	55
	—. CHRISTISON, Sir Robert, Bart., M.D., F.R.S., physician; at Edinburgh	84

			Age
Jan.	28.	KNOWLES, Richard Brinsley, journalist and editor of records published under the authority of the Historical MSS. commission; at Regent's Park	62
	31.	DAVENPORT, John Marriott, F.S.A., solicitor, for more than 50 years Clerk of the Peace for the county of Oxford; at Oxford	72
Feb.	4.	PALLISER, Major Sir William, C.B., M.P., inventor of projectiles for piercing armour-plated ships; at Earl's Court Square	51
	5.	YARDLEY, Vincent, Commissariat Officer at the Battle of Waterloo, and late Chief Clerk to the Metropolitan Police; at Marlborough Hill, St. John's Wood	86
	8.	AUERBACH, Berthold, novelist; at Cannes	69
	22.	DOWAGER COUNTESS OF ESSEX (Catherine Stephens) in early life distinguished as a vocalist and on the stage; at Belgrave Square	87
	28.	RUDERSDORFF, Hermine, vocalist; at Boston, U.S A.	59
	—.	ROBINSON, Rev. Thomas Rodney, D.D., Astronomer at Armagh Observatory since 1815; at Armagh	89
Mar.	7.	WILTON, Earl of, Right Hon. Thomas Egerton; at Melton Mowbray	82
	—.	MUIR, John, LL.D., D.C.L., formerly of the Indian Civil Service, Sanscrit scholar; at Edinburgh	72
	8.	HUGHES, Bulkeley, M.P. for Carnarvon Burghs 1837-59 and 1865-81, in point of years "the Father of the House of Commons;" at Anglesea	83
	10.	THOMSON, Sir Charles Wyville, M.D, F.R.S., Professor of Natural History in Edinburgh University, and Director of the *Challenger* expedition; at Linlithgow	52
	11.	BUSK, Hans, LL.D., D.C.L., earliest promoter of the Volunteer Movement; at Ashley Place	66
	23.	NEWMARCH, William, F.R.S., statistician; at Torquay	62
	24.	LONGFELLOW, Henry Wadsworth, poet; at Cambridge, Massachusetts, U.S.A.	75
	26.	GREEN, Thomas Hill, Whyte's Professor of Moral Philosophy; at Oxford	45
	27.	BARKER, Thomas Jones, painter of military and historical subjects; at Haverstock Hill	68
	—.	MOE, Jörgen, Bishop of Christianssand, poet and comparative mythologist; at Christianssand	68
April	6.	FRANCIS, John, for more than fifty years publisher of the "Athenæum"; at Wellington Street	70
	—.	BARKER, Most Rev. Frederick, D.D., Bishop of Sydney and Metropolitan of Australia; at San Remo	74
	7.	MCCARTHY, Denis Florence, Poet; at Dublin	60
	8.	GILPIN, Colonel Sir Richard Thomas, Bart., M.P. for Bedfordshire 1851-81; at Dunstable	81
	9.	ROSSETTI, Dante Gabriel, poet and painter; at Birchington, Kent	64
	11.	DUNCAN, Edward, water-colour painter; at Haverstock Hill	78
	13.	PEARSON, Rev. Hugh M. H., Canon of St. George's, Windsor; at Sonning	64
	18.	COLE, Sir Henry, K.C.B., Promoter of the Great Exhibition of 1851, and of the Science and Art Department at South Kensington, and a chief agent in the revival of the Society of Arts	73
	19.	DARWIN, Charles Robert, philosopher and naturalist; at Bromley, Kent	73

		Age
April	21. ADY, Ven. William Brice, Archdeacon of Colchester; at Little Baddow	65
	22. PERRY, Right Hon. Sir Thomas Erskine, late Member of Council of India; at Eaton Place	75
	—. LAFFAN, Lieut.-Gen. Sir Robert Michael, K.C.M.G., R.E., Governor of the Bermudas; at Bermuda	60
	26. RICE, James, novelist; at Redhill	36
	27. EMMERSON, Ralph Waldo, essayist; at Concord, Mass., U.S.A.	78
May	10. HINCHCLIFF, Thomas Woodbine, traveller, one of the founders of the Alpine Club; at Aix-les-bains	56
	11. BROWN, John, M.D., LL.D., physician and author; at Edinburgh	71
	13. CORMACK, Sir John Rose, M.D., physician; at Paris	67
	24. HOLKER, Right Hon. Sir John, Lord Justice of Appeal	54
	—. HANNA, Rev. W., D.D., author of "The Life of Christ"	73
	26. CHESTER, Joseph Samuel, Hon. D.C.L. of Oxford, genealogist, one of the founders of the Harleian Society; at Southwark Park Road	61
June	2. GARIBALDI, Giuseppe, General, Republican leader; at Caprera	74
	3. THOMPSON, James, poet, author of "The City of Dreadful Night," &c.	47
	8. RUSSELL, Scott, M.A., F.R.S., engineer and shipbuilder, builder of the *Great Eastern* and of the dome of the Vienna Exhibition of 1873; at Ventnor	74
	10. LAWSON, Cecil G., landscape painter; at Brighton	30
	11. HALL, Robert, C.B., Vice-Admiral, Secretary of the Admiralty; at Spring Gardens	65
	16. ROBINSON, Rev. Hugh George, Prebendary of York and a Charity Commissioner; at Brighton	62
	20. DONNE, William Bodham, formerly librarian of the London Library and Examiner of Plays in the Lord Chamberlain's office; at Weymouth Street	74
	25. RAFF, Joachim, composer; at Frankfort	60
	28. TURLE, James, Organist of Westminster Abbey, 1817 to 1875; at Westminster	80
	29. HANSOM, Joseph Aloysius, inventor of the hansom cab; at 399, Fulham Road	78
July	6. WARD, Dr. William George, formerly editor of the "Dublin Review;" at Hampstead	70
	7. SCOBELEFF, Michael, General in the Russian Army; at Moscow	39
	8. BROWNE, Hablot Knight ("Phiz"), artist and illustrator of Dickens's works; at Brighton	66
	9. ROBERTSON, Rev. James Craigie, Canon of Canterbury, author; at Canterbury	69
	—. WEBSTER, Benjamin, actor, dramatist, and theatrical manager; at Kennington	82
	22. BALFOUR, F. M., M.A., F.R.S., Professor of Animal Morphology at Cambridge University; killed while climbing a mountain in Switzerland	31
Aug.	5. CALCOTT, William Hutchins, pianist and composer; at Campden House Road, Kensington	74
	13. JEVONS, Professor William Stanley, political economist; drowned at Bexhill, Sussex	46
	17. MERRIMAN, Right Rev. Nathaniel James, D.D., Bishop of Grahamstown, South Africa; at Grahamstown	72

			Age
Aug.	20.	ONSLOW, Guildford J. H. M. E., formerly M.P. for Guildford, the supporter of Arthur Orton, the claimant to the Tichborne estates; at Ropley	68
	22.	HEATH, James, inventor of the Bath chair; at Bath	79
	25.	HUTCHINSON, John Dyson, late M.P. for Halifax, by whose exertions the Newspapers Law of Libel Act was passed in 1881; at Redcliffe Square	60
	27.	STEERE, Right Rev. Edward, D.D., Missionary Bishop of Central Africa; at Zanzibar	51
Sept.	2.	BERNARD, Right Hon. Mountague, D.C.L., Fellow of All Souls, Oxford, and professor of International Law; at Overross, Ross	62
	9.	GREY, Right Hon. Sir George, Bart., G.C.B., Home Secretary and Colonial Secretary in Lord Russell's and Lord Aberdeen's Administrations and Member of the House of Commons 1832-74; at Falloden	83
	13.	ALDERSON, Sir James, M.A., M.D., F.R.S., Physician Extraordinary to the Queen, and formerly President of the Royal College of Physicians; at Berkeley Square	87
	16.	PUSEY, Rev. Edward Bouverie, D.D., Regius Professor of Hebrew and Canon of Christ Church, Oxford; at Ascot	82
	17.	WELLESLEY, Very Rev. the Hon. Gerald Valerian, Dean of Windsor and High Almoner to the Queen; at Windsor	73
	18.	WALKER, John, Alderman of the City of London; at Acton	63
	21.	HARRISON, Sir Edmund Stephen, C.B., Deputy Clerk of the Privy Council; at 114, Harley Street	72
	22.	TENTERDEN, Lord (C. S. A. Abbott), Under Secretary for Foreign Affairs; at Lynmouth	47
Oct.	4.	MELVILLE, Philip, late Secretary in the Military Department of the East India Company; at Ettry, Cornwall	86
	5.	VON HALM, Karl, Director of the Library of Munich University, Latin Scholar; at Munich	73
	12.	BURNELL, Arthur Coke, Oriental Scholar; at West Stratton	41
	14.	CHABOT, Charles, expert in handwriting; at Clapham	66
	28.	MAHMOUD-ES-SADOK, Bey of Tunis; at Tunis	
Nov.	1.	SAWYER, William, journalist and poet	54
	-.	CRITCHETT, George, oculist; at Harley Street	65

NOTE.—The above table contains the names of 99 persons, of whom 19 died at the age of 80 or more.

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In 1882 to **36** per cent. of the Sums Assured and bonus added thereto; and to 13 times the Annual Premiums payable.

In 1885 to **37** per cent. of the Sums Assured and Bonus added thereto; and to 13 times the Annual Premiums payable.

In June, 1877, the amount of Profits declared by the Company was ... **£183,883**

In December, 1882 ... ... **£218,182**

In addition to the Bonus declared periodically, **interim Bonuses** *are given on Policies of five years old and upwards, which become claims between any two valuations, thereby practically securing to the Assured an Annual Bonus.*

During the past 38 years the Company has paid in Claims **£8,141,532**

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Number of Policies in Force	10,566
Sums Assured, with Bonus Additions	£9,512,526
Security—Accumulated Fund	£3,550,863
Annual Income	£378,732
Total Claims paid, with Bonus Additions	£7,822,300
Total Bonuses declared to 1883 inclusive	£4,153,415

Bonus.—The Society being on the **Mutual** principle, the Assured share the **whole of the Profits.** Policies effected before 31st December of each year receive a full year's Bonus for the year of entry.

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Liabilities...	3,050,831
Surplus	£568,830

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BONUS TABLE FOR 1887.

TABLE showing the total Amount payable under a Policy for £1,000 (including the additions), in the event of its becoming a claim after payment of the premium due in the year 1887.

Date of Policy.	Sum payable including additions.	
	£	s.
From 24th July 1817 to 16th April 1818	3735	0
,, 18th April 1818 to 4th Feb. 1819	3635	0
,, 5th Feb. 1819 to 3rd Jan. 1820	3535	0
,, 7th Jan. 1820 to 22nd Dec. 1820	3435	0
,, 23rd Dec. 1820 to 30th Nov. 1821	3335	0
,, 1st Dec. 1821 to 7th Mar. 1823	3235	0
,, 7th Mar. 1823 to 24th May 1824	3135	0
,, 25th May 1824 to 8th Mar. 1825	3035	0
,, 9th Mar. 1825 to 3rd Nov. 1826	2960	0
,, 7th Nov. 1826 to 15th July 1828	2885	0
,, 21st July 1828 to 1st Mar. 1830	2810	0
,, 3rd Mar. 1830 to 24th Nov. 1831	2735	0
,, 24th Nov. 1831 to 1st Aug. 1833	2660	0
,, 1st Aug. 1833 to 18th June 1835	2585	0
,, 19th June 1835 to 21st July 1837	2510	0
,, 21st July 1837 to 22nd Jan. 1839	2435	0
,, 24th Jan. 1839 to 10th Dec. 1840	2360	0
,, 15th Dec. 1840 to 2nd Nov. 1842	2285	0
,, 12th Nov. 1842 to 18th June 1845	2230	0
,, 19th June 1845 to 2nd Mar. 1847	2175	0
,, 3rd Mar. 1847 to 14th Nov. 1848	2120	0
,, 14th Nov. 1848 to 19th Nov. 1850	2065	0
,, 19th Nov. 1850 to 26th July 1853	2010	0
,, 26th July 1853 to 31st Dec. 1855	1955	0
,, 1st Jan. 1856 to 31st Dec. 1856	1900	0
,, 1st Jan. 1857 to 31st Dec. 1857	1845	0
,, 1st Jan. 1858 to 31st Dec. 1858	1790	0
,, 1st Jan. 1859 to 31st Dec. 1859	1735	0
,, 1st Jan. 1860 to 31st Dec. 1860	1697	10
,, 1st Jan. 1861 to 31st Dec. 1861	1660	0
,, 1st Jan. 1862 to 31st Dec. 1862	1622	10
,, 1st Jan. 1863 to 31st Dec. 1863	1585	0
,, 1st Jan. 1864 to 31st Dec. 1864	1557	10
,, 1st Jan. 1865 to 31st Dec. 1865	1510	0
,, 1st Jan. 1866 to 31st Dec. 1866	1472	10
,, 1st Jan. 1867 to 31st Dec. 1867	1435	0
,, 1st Jan. 1868 to 31st Dec. 1868	1397	10
,, 1st Jan. 1869 to 31st Dec. 1869	1360	0
,, 1st Jan. 1870 to 31st Dec. 1870	1340	0
,, 1st Jan. 1871 to 31st Dec. 1871	1320	0
,, 1st Jan. 1872 to 31st Dec. 1872	1300	0
,, 1st Jan. 1873 to 31st Dec. 1873	1280	0
,, 1st Jan. 1874 to 31st Dec. 1874	1260	0
,, 1st Jan. 1875 to 31st Dec. 1875	1220	0
,, 1st Jan. 1876 to 31st Dec. 1876	1180	0
,, 1st Jan. 1877 to 31st Dec. 1877	1140	0
,, 1st Jan. 1878 to 31st Dec. 1878	1100	0
,, 1st Jan. 1879 to 31st Dec. 1879	1060	0
,, 1st Jan. 1880 to 31st Dec. 1880	1040	0
,, 1st Jan. 1881 to 31st Dec. 1881	1020	0

The Equitable has never allowed Commission.

J. WARE STEPHENSON, *Actuary.*

GUARDIAN
Fire and Life Assurance Company.

Established 1821, *and Empowered by Special Acts of Parliament.*

Subscribed Capital	**£2,000,000**
Paid up Capital	**1,000,000**
Total Funds in hand	**3,901,000**
Total Income, over	**768,000**

Directors.

CHAIRMAN—BEAUMONT W. LUBBOCK, ESQ.

DEPUTY-CHAIRMAN—JOHN B. MARTIN, ESQ.

ROWLAND NEVITT BENNETT, ESQ.
HENRY BONHAM-CARTER, ESQ.
CHARLES F. DEVAS, ESQ.
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JOHN HUNTER, ESQ.
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Solicitors.—MESSRS. PARKIN, WOODHOUSE, TROWER & FREELING, 5, New Square, Lincoln's Inn.

Head Office:—11, LOMBARD STREET, LONDON, E.C.

Manager of the Fire Department.—F. J. MARSDEN.
Actuary and Secretary.—T. G. C. BROWNE.
Bankers.—MESSRS. MARTIN & Co., 68, Lombard Street.

Law Courts Branch:—21, FLEET STREET.

Branch Manager.—RALPH P. HARDY. | *Bankers.*—MESSRS. CHILD & Co., 1, Fleet St.

LIFE DEPARTMENT.

The last Quinquennial Valuation was made on the basis of the Institute of Actuaries' (H^M & H^{M5}) Tables of Mortality and 3 per cent. interest, the net premiums only being valued and the whole of the loading reserved. The sum of £175,228 was divided as a bonus among 5,052 participating policies assuring exclusive of existing bonus £4,321,144, the annual premiums payable under which amounted to £132,533 2*s.* 2*d.*

The exceptional Security offered by the paid up Capital of £1,000,000 has attracted a large amount of non-participating business to the Company, and the profit derived from it during the five years was more than sufficient to pay the sum of £40,000 which the Proprietors took as their share of the surplus, and which was the sole benefit which they received from the Life business in return for the guarantee afforded by the unusually large paid-up Capital of the Company. The Policy-holders in the "Guardian" have, therefore, the Security of a Proprietary Company with the Profits of a Mutual Society.

The full Bonus Report and Prospectus will be forwarded on application.

Life Fund (1885) - - £2,177,000 | Life Income - - - £288,000

FIRE DEPARTMENT.

Insurances effected on Property at Home and Abroad at Moderate Rates. Losses by Lightning are made good by the Company.

Fire Fund (1885) - - £539,000 | Fire Income - - - £453,000

HAND-IN-HAND

FIRE AND LIFE INSURANCE SOCIETY,

26, NEW BRIDGE STREET, BLACKFRIARS, LONDON, E.C.

Instituted in 1696.—*Extended to Life Insurance*, 1836.

DIRECTORS.

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Bankers—Messrs. GOSLINGS & SHARPE, 19, Fleet Street.

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Actuary—JAMES TERRY, F.I.A.

The **oldest Insurance Office** in the World.

The **only Mutual Office** in the Kingdom for both **Fire and Life.**

There being **no Shareholders, all Profits are divided amongst** the **Insured.**

BONUS RETURNS.

LIFE—1st Series ... ... 75 per Cent. per Annum.
2nd Series (according to the age of the Policy) ... 70 to 75 per Cent. per Annum.
3rd Series do. do. ... 50 rising to 60 per Cent. per Annum.
4th Series, after 1st Five Years, to commence at . 45 per Cent. per Annum.

FIRE (with certain exceptions)—Annual Policies 20 per cent. at the end of each 5th year. Septennial Policies, varying with the nature of the risk, 25 to 50 per cent. at the end of each 7th year.

No Policy Holder is subject to **any Personal Liability.**

The Directors are **willing to appoint as Agents persons of good position and character.**

VALUATION BALANCE SHEET, 31*st DECEMBER*, 1885.

ASSETS.

General Accumulated Fund, Fire and Life	£1,646,932
Life Assurance Fund, under Act of 1870	519,414
Present Value of Life Premiums	1,668,393
	£3,834,739

LIABILITIES.

Present Value of Sums Insured and Annuities, LIFE ...	£2,380,174
Sum Reserved for future Abatements on Premiums, LIFE	1,021,786
Sum Reserved for Bonus Returns on unexpired Policies, FIRE	22,770
Premiums in hand on account of unexpired terms of Insurance, FIRE	42,805
Balance of Assets unappropriated	367,204
	£3,834,739

The ACCOUNTS and STATEMENTS as deposited with the Board of Trade, as well as Prospectuses and Forms of Proposal, may be had of any of the Society's Agents, or on application at the Head Office.

BENJAMIN BLENKINSOP, *Secretary.*

THE LONDON ASSURANCE.

Incorporated by Royal Charter, A.D. 1720.

FOR FIRE, LIFE, AND MARINE ASSURANCES.

Head Office—No. 7, ROYAL EXCHANGE, LONDON.

Branch Offices
- No. 43A, PALL MALL, LONDON.
- „ 99, ST. VINCENT STREET, GLASGOW.
- „ 14, EAST PARADE, LEEDS.
- „ 28, EXCHANGE STREET EAST, LIVERPOOL.
- „ 16, CROSS STREET, MANCHESTER.

LEWIS ALEXANDER WALLACE, ESQ., *Governor.*

GEORGE WILLIAM CAMPBELL, ESQ., *Sub-Governor.*
DAVID PLENDERLEATH SELLAR, ESQ., *Deputy-Governor.*

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OTTO AUGUST BENECKE, Esq.	HOWARD GILLIAT, Esq.	Capt. R. W. PELLY, R.N.
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ALFRED CLAYTON COLE, Esq	ROBERT HENDERSON, Esq.	ALBERT G. SANDEMAN, Esq.
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The Hon. FRANCIS PARKER, M.P., 3, Temple Gardens, E.C.
The Hon. JOHN MANNERS-SUTTON, *Manager of West End Branch.*

Secretary.
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Underwriter.
JOHN STEWART MACKINTOSH, ESQ.

Actuary.
ARTHUR H. BAILEY, ESQ.

Manager of the Fire Department.
JAMES CLUNES, ESQ.

Medical Officers.

EDWARD CLAPTON, M.D., 10A, St. Thomas's Street, Southwark.
JOHN HARLEY, M.D., 39, Brook Street, Grosvenor Square.

The Corporation has granted Fire, Life, and Marine Assurances for more than a Century and a half; during that long period it has endeavoured to introduce into its practice all the real improvements that have from time to time been suggested, and to afford every facility for the transaction of business.

Of the Share Capital the sum of £448,275 has been paid up. The funds in hand exceed £3,400,000.

Claims under Life Policies are payable at once upon proof of death and title being furnished to the satisfaction of the Court of Directors.

Copies of the Accounts pursuant to "The Life Assurance Companies Act, 1870," can be had on application personally or by letter.

North British and Mercantile Insurance Company.

Incorporated by Royal Charter and Special Acts of Parliament.

Resources of the Company as at 31*st December*, 1885 :—

I.	Authorised Capital	£3,000,000	0	0
	Subscribed Capital	2,500,000	0	0
	Paid-up Capital...	625,000	0	0
II.	Fire Fund—Reserve...	£1,250,000	0	0
	Premium Reserve	382,836	18	1
	Balance of Profit and Loss Account	53,621	5	4
		£1.686,458	3	5
III.	Life Fund—Accumulated Fund of Life Branch	£3,592,628	1	8
	,, ,, Annuity Branch	586,444	3	9
		£4,179,072	5	5
IV.	Revenue for the Year 1885—			
	From the Life Department: Life Premiums, Interest, and Fees	£520,735	9	2
	Annuity Prices, Premiums, and Interest	100,518	6	0
		£621,253	15	2
	From Fire Department: Fire Premiums, Interest and Fees ...	£1,238,353	9	8
		£1,859,607	4	10

The Accumulated Funds of the Life Department are free from liability in respect of the Fire Department, and in like manner the accumulated Funds of the Fire Department are free from liability in respect of the Life Department.

President—
His Grace the Duke of Roxburghe.

Vice-President—
His Grace the Duke of Sutherland, K.G.

Chairman of the Central Court—David Davidson, Esq.

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George Young, Esq.	Quintin Hogg, Esq.	Alex. D. Kleinwort, Esq.

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George Henry Burnett.

Foreign Sub-Managers.
Philip Winsor and C. E. De Paiva.

Secretary.—F. W. Lance.

Manager of Life Department and Actuary—Henry Cockburn.

Medical Officers.
Hermann Weber, M.D.; H. Port, M.D.

Solicitor.—Sir W. R. Drake.

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Geo. Auldjo Jamieson, Esq.	Ralph Dundas, Esq.	
Frederick Pitman, Esq.	John Wharton Tod, Esq.	
	Hon. Henry J. Moncreiff.	

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Secretary—Philip R. D. Maclagan.
Actuary—Thomas Wallace.

Med. Officer—Jn. Moir, M.D., F.R.C.P.
Solicitors—J. & F. Anderson, W.S.
Auditor—Tho. Haldane, *Chart. Account.*

LIFE DEPARTMENT.

The principles on which this Company was founded, and on which it continues to act, combine the system of Mutual Assurance with the safety of a large Protecting Capital and Accumulated Funds, and thus afford all the facilities and advantages which can prudently be offered by any Life Assurance Office. Under these principles the business of the Company continues rapidly to increase. *Ninety per Cent.* of the *Whole Profits* is divided among the Assurers on the Participating Scale. The *Profits* are divided every five years. *Policies are Indisputable* after Five Years. *Annuities* of all kinds are granted, and the rates fixed on the most favourable terms.

Prospectuses and every information can be obtained at the CHIEF OFFICES.

London: 61, Threadneedle St., E.C.; West End Office: 8, Waterloo Place, S.W. Edinburgh: 64, Princes St.

British Empire Mutual Life Assurance Company,

NEW BRIDGE STREET, LONDON, E.C.

Incorporated in the year 1847, *under Act* 7 *and* 8 *Vict. cap.* 110, *and further empowered by Special Act,* 15 *Vict. cap.* 53.

DIRECTORS.

JOHN RÜNTZ, Esq., F.A.S., F.S.S., *Chairman.*
J. H. TROUNCER, M.D., Lond., *Deputy Chairman.*

H. M. BOMPAS, Esq., Q.C.
HUGH CAMPBELL, M.D.
ROBERT FREEMAN, Esq.
WILLIAM GROSER, Esq.
PEARSON HILL, Esq.
DONALD MUNRO, Esq.
THE HON. HENRY NOEL.
GEORGE PHILLIPS, Esq.
JOHN E. TRESIDDER, Esq.
WILLIAM HENRY WILLS, Esq.

Auditors (elected by the Members)—W. AUGUSTINE SPAIN, Esq., AND HENRY CATTLEY STEWART, Esq. *Solicitors*—Messrs. WATSON, SONS, & ROOM. *Surveyor*—SAMUEL WALKER, Esq. *Actuary*—JOSIAH MARTIN, F.I.A., F.S.S. *Physician*—E. H. GREENHOW, M.D., F.R.S. *Secretary*—EDWIN BOWLEY, F.I.A., F.S.S.

This Company being established on the **Mutual Principle,** all surplus funds belong to the Members. Every third year a careful Valuation of the Business is made, and large Bonuses have been declared. The Average Cash Bonus (Triennially) exceeds 20 per cent. on the Premiums paid.

The Surplus Funds already appropriated exceed **One Million Sterling.** It has an ANNUAL INCOME exceeding **Two Hundred and Ten Thousand Pounds.** An ACCUMULATED FUND, arising solely from premiums, exceeding **One Million One Hundred and Twenty Thousand Pounds.** And has PAID IN CLAIMS upwards of **One Million Sterling.**

Policies absolutely indisputable after five years, provided the age of the Assured has been admitted. Policies kept in force when requested by appropriating the Surrender Value to the payment of premiums. No charge for voyage to, or residence in, any part of the world, except unhealthy climates. Assurers under the TEMPERANCE SCHEME are placed in a separate Section. Policies may be effected under the Deferred Bonus plan. *Loans on Freeholds, Leaseholds, and other Securities considered.*

Prospectuses, Copies of the last Report and Balance Sheet, and Board of Trade Returns, &c., can be obtained on application to any of the Agents of the Company, or to EDWIN BOWLEY, *Secretary.*

GOVERNESSES' BENEVOLENT INSTITUTION.

INCORPORATED BY ROYAL CHARTER,

WITH POWER TO HOLD LAND BY GIFT OR PURCHASE.

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THOMAS HOADE WOODS, Esq.

Honorary Secretary—THE REV. ALFRED J. BUSS, B.A.

Secretary—CHARLES WILLIAM KLUGH, Esq., 32, Sackville Street, W.

The objects of this Society are—

Temporary Assistance to Governesses in distress, afforded privately and delicately, through the Ladies' Committee.

Annuity Fund. Elective Annuities to Aged Governesses, secured on invested capital, and thus independent of the prosperity of the Institution.

Provident Fund. Provident Annuities purchased by Ladies in any way connected with Education, upon Government Security, agreeably to the Act of Parliament. This branch includes a Savings Bank.

A Home for Governesses during the intervals between their engagements.

A System of Registration, entirely free of expense.

An Asylum for the Aged.

Membership consists in the payment of an annual Guinea, or of Ten Guineas in one sum. Subscribers are entitled to vote for Annuities in the proportion of one Vote for each Annual Half-Guinea not in arrear, and for each Donation of Five Guineas. Subscriptions are due on the 1st of January, and can always be remitted by Post-Office Order, or by a Cheque crossed "Sir S. Scott & Co."

NATIONAL LIFE ASSURANCE SOCIETY,

FOR MUTUAL ASSURANCE.

Established 1830.

2, KING WILLIAM STREET, LONDON, E.C.

Moderate Premiums, Large Profits, Undoubted Security, Prompt Payment of Claims.

Examples of Bonuses and Reductions of Premiums:—

CLASS A.—Closed 1870.				CLASS B.—Commenced in 1871.			
Date of Policy.	Age at Entry.	Sum Assured.	Total Bonus.	Date of Policy.	Age at Entry.	Original Premium.	Permanent Reduction.
		£	£			£ s. d.	£ s. d.
1858	55	200	243	1871	38	31 0 0	9 12 9
1862	32	1,500	922	1872	54	54 10 10	26 5 7
1864	26	1,000	527	1874	47	41 7 6	11 6 6
1868	39	2,000	922	1875	71	455 4 7	334 19 4
1870	31	300	116	1876	60	314 12 6	111 6 6

Assurers in Class A have their Premiums reduced by 87 per cent. of the original amounts, leaving them only 13 per cent. to pay. Those who elected to take Bonuses instead of Reductions have *annual* additions made to their Policies, varying from 4 to over 9 per cent. of the original sums assured.

Assurances granted to Military and Naval Officers at low fixed rates, covering all risks of Climate and Service.

Prospectuses and every information furnished on application to

HENRY JOHN PUCKLE, *Manager & Secretary.*

PROVIDENT LIFE OFFICE.

FOUNDED 1806.

50, REGENT STREET, LONDON, W., AND 14, CORNHILL, E.C.

EXISTING ASSURANCES exceed	**£7,000,000**
INVESTED FUNDS	**£2,455,791**
ANNUAL INCOME	**£323,780**
CLAIMS AND SURRENDERS exceed ...	**£8,000,000**
BONUSES DECLARED	**£2,629,814**

REVISED CONDITIONS OF ASSURANCE. — Foreign Residence and Travel.—All Policies already issued and to be issued, after having been Five Years in Force—the Life Assured not being engaged in any Military, Naval, or Seafaring Service, and of the age of Thirty Years and upwards—shall be relieved from all conditions as to Foreign Residence and Travel.

Suicide Claims.—In the event of Death by Suicide after a Policy has been Twelve Months in force, the Claim is paid in full. If Death occurs *within* Twelve Months the whole of the Premium paid is refunded.

This in no way affects the old-established rule of the Office to pay Suicide Claims in full under Policies granted to one person on the life of another, or where the Policies are held by Assignees for a bonâ fide *consideration.*

HALF-CREDIT SYSTEM.—Merchants, Traders, and others, requiring the full use of their Capital, and desiring a Life Policy at the cheapest present outlay, are invited to examine the terms of the Half-Credit System of this Office.

Prospectuses, and further Information to be obtained at the Head Office, or of any of the Agents. CHARLES STEVENS, *Actuary and Secretary.*

PRUDENTIAL ASSURANCE COMPANY, LIMITED,

HOLBORN BARS, LONDON.

DIRECTORS.

EDGAR HORNE, Esq., Great George Street, Westminster, *Chairman.*
HENRY HARBEN, Esq., Seaford Lodge, Hampstead, *Deputy-Chairman.*
ROBERT BARNES, M.D., Harley Street, London.
ROBERT CROSS, M.D., 42, Craven Street, London.
PATRICK FRASER, M.D., Oriental Club, London.
H. A. HARBEN, Esq., 1, New Square, Lincoln's Inn, London.
W. T. PUGH, Esq., Belsize Park, Hampstead.
PERCY T. REID, Esq., Lloyds, London.

MANAGERS.

Industrial Branch—
THOMAS C. DEWEY, Esq.

Ordinary Branch—
WILLIAM HUGHES, Esq.

Every Description of Life Assurance and Annuity Business Transacted.

Invested Funds	**£6,000,000**
Claims Paid	**£8,000,000**
Premiums, Ordinary Branch	**£350,000**
Premiums, Industrial Branch	**£2,870,000**
Interest	**£200,000**
Total Income	**£3,420,000**

The Last Annual and Valuation Reports can be obtained upon Application.

W. J. LANCASTER, *Secretary.*

ROYAL EXCHANGE ASSURANCE CORPORATION

(*Established by Royal Charter, A.D.* 1720).

FOR SEA, FIRE, LIFE, AND ANNUITIES.

CHIEF OFFICE:—ROYAL EXCHANGE, LONDON.
BRANCH:—29, PALL MALL.

The Accumulated Funds exceed £4,000,000.
The Total Claims paid by this Corporation have exceeded THIRTY-FOUR MILLIONS Sterling.

FIRE.

Policies issued free of expense.

Losses occasioned by Lightning will be paid, whether the property be set on fire or not.

Loss or damage caused by Explosion of Coal Gas in any building assured will be made good.

LIFE.

LIBERAL CONDITIONS OF ASSURANCE.

Surrender Values allowed after payment of two annual Premiums.

Paid-up Policies allowed in lieu of Surrender Values.

Extensive Foreign Residence free of charge from the first.

Policies "Indisputable" and "World-wide" after 5 years.

Claims paid at once, on proof of death and title, without discount.

A Prospectus, Table of Bonus, and Balance Sheet will be forwarded on application.

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